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Letter dated 16 January 2001 from the Permanent Representative of Austria to the United Nations addressed to the Secretary-General

Permit me to inform you about the first event of the Global Forum on Sustainable Energy (GFSE), held in Austria from 11 to 13 December 2000.

GFSE is intended as a platform for multi-stakeholder dialogue on issues pertinent to energy for sustainable development. It grew out of the outreach efforts of the World Energy Assessment and intends to orchestrate a series of dialogues that will facilitate decision-making on policy issues in the appropriate forums. The first event was dedicated to rural energy because of the urgent need to address the question of bringing modern energy services to the more than two billion people currently without access to modern energy.

The first meeting of GFSE was co-sponsored by the International Institute for Applied Systems Analysis, the United Nations Development Programme, the Austrian Government and the City of Vienna. In the lead up to the first meeting, GFSE has enjoyed the support of the Department of Economic and Social Affairs of the United Nations Secretariat, the United Nations Industrial Development Organization, the Food and Agriculture Organization of the United Nations, the International Atomic Energy Agency, the Organization of Petroleum Exporting Countries, the Environmental Partnership for Central Europe, the International Energy Institute, the International Council of Scientific Unions, the World Conservation Union, the Leadership for Environment and Development Foundation (LEAD), the World Energy Conference and Verbundplan, and has benefited from active cooperation with the World Bank and many individual experts on energy and sustainable development. Financial support from LEAD, Norway and Sweden for the participation of experts from the least developed countries in the first meeting of GFSE is gratefully acknowledged.

Please find enclosed the executive summary of the first meeting of GFSE (see annex I), the final version of the programme (see annex II) and the report by the International Institute for Sustainable Development (see annex III).

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I would be grateful if the present letter and its annexes could be circulated as a document of the Commission on Sustainable Development.

(*Signed*) Gerhard **Pfanzelter**

Annex I

First meeting of the Global Forum on Sustainable Energy

Rural Energy: Priorities for Action

11 - 13 December 2000
IIASA (Laxenburg), Austria

Executive Summary

Purpose of the GFSE

The Global Forum on Sustainable Energy (GFSE) is intended as a platform for multi-stake-holder dialogue on issues pertinent to energy for sustainable development. It grew out of the outreach efforts of the World Energy Assessment and is envisaged to orchestrate a series of dialogues that will facilitate decision-making on policy issues in the appropriate fora and promote concrete cooperation endeavors in the field.

Main Message of the First Meeting of the GFSE

The First Meeting of the Global Forum on Sustainable Energy, dedicated to „Rural Energy: Priorities for Action" concluded with a strong plea for the central role of energy policy interventions with a view of eradicating poverty and achieving the internationally agreed development targets.

Recent studies demonstrate clearly how lack of access to modern energy carriers limits development opportunities, perpetuates poverty and social injustice and places a severe burden on human health and the local, regional and global environment.

To implement the goal accepted by the international community to halve the proportion of people living on less than $ 1 /day by 2015, access to affordable modern energy carriers is a pre-requisite. Today an estimated 2 billion people lack access to electricity and use traditional fuels for cooking. It is proposed to adopt a clear goal: To reduce the proportion of people without access to clean and affordable fuels and electricity by half by 2015. This will require a combined effort of the public and private sectors and civil society, and targeted regulatory, financial, institutional and education training efforts as well as significantly increased streams of public and private investments.

Since the energy requirements to meet the basic needs in rural areas represent a minor fraction of global oil consumption, it should be possible to meet this energy need, provided there is sufficient political will. Political will is required especially to generate the public money needed to provide transitional finance until the rural poor can generate sufficient income to be able to pay full cost. In the long term, in

principle users should pay the full cost. Although many poor people pay in the order of 10 $ a month for energy, many modern energy carriers are beyond their present capacity to pay.

To reach the goal of reducing the proportion of people without access to modern energy carriers by half, the determined promotion of both conventional energy, especially LPG to meet cooking needs, and renewable energy, especially biomass fueling modern conversion technologies both in decentralized and grid-connected systems, are essential. The provision of clean fuels and of electricity are to be simultaneously advanced.

There was a convergence of views on the important, complementary roles that governments and the private sector have to play in a two-pronged approach in order to address the problem of energy access effectively. The private sector was felt to be best-placed to address these needs where functioning commercial markets can be created. The public sector's main role was perceived as addressing market reforms and providing transitional finance, including properly crafted subsidies, using domestic budgets, development bank loans and ODA. The public thrust could begin with a new „donor pledge" to target funds to leverage market transformation and avoid competing with/crowding out private investment. Furthermore governments could direct export credit agency lending so as to promote sustainable energy technologies for rural areas.

In this regard it was felt that a new level of public-private cooperation should be found with public institutions working in concert with private investors. Since ODA flows will always be scarce - even if they are increased as was felt is necessary - it seemed important to establish how ODA could best contribute to creating suitable framework conditions for attracting private investments. Ways have to be found to match local affordability with the commercial need for adequate returns.

Participants felt that - given the wide variety of circumstances - solutions to address the energy access problem should be tailor-made. No one solution would fit all situations; various energy sources should not be played off against each other; since both renewables and conventional energy would be needed. Energy solutions should build on local knowledge and be suited to local needs. Regional cooperation was encouraged.

Energy policy - regarded as a sectoral activity - must seek to be compatible with sustainable development. Furthermore energy considerations must be treated in a cross-sectoral way and integrated in development priorities and national/regional strategies.

The lack of adequate data on the energy situation in developing countries, especially in rural areas, was high-lighted.

Among the key policy issues to be addressed the following were emphasized:

- multi-stake-holder undertakings to bring together actors from all key sectors in the energy field to identify compatible public/private strategies;

- the need to enhance coherence between finance, energy & environment agencies, both at the domestic and international levels;

- market reform („re-regulation" rather than de-regulation to enable the markets to function in ways compatible with sustainable development), creating the right framework conditions to attract investment from domestic and international capital;

- realistic pricing systems (users pay for usage, access may be subsidized);

- link local agriculture and cottage industries to rural energy development;
- capitalize on synergies between many greenhouse gas reduction strategies and expanded delivery of modern energy services.

The following were highlighted as priority actions:

- Financing institutions to extend favourable conditions for „new" renewables (e.g. by treating loans for „new" renewables ona par basis - concerning payback periods, grace periods, interest trates, etc. - with conventional energy project with similar risk/reward profile and by offering „blended" financial products that mix available concessional resources with commercial offerings and which are therefore tailored to the needs of investment opportunities in the off-grid and renewables sub-sector);

- Donors to make available additional funds and to work towards enhanced donor-coordination;

- Developing countries to introduce regulatory systems to promote rural energy access (e.g. financing connections, covering up-front capital costs, renewable portfolio standards, etc.);

- Public finance - even „proper" subsidies - should be required when commercial grade investments are absent; subsidies (with „sunset" clauses) for demand side, applied to access costs, not operating costs;

- Promote local energy enterprises as employment opportunities - enhance local private entrepreneurs ; develcping local dealers to sell maintain/equipment, built on local retail networks and relationships;

- Concessions (with potential for subsidies as needed) to create delivery networks through local franchises.

The need for agreement on a concrete action plan - with active involvement of private sector representatives - at CSD 9 was emphasized.

Participation and sponsors

Some 150 participants attended the First Meeting of the GFSE in their personal capacity. They represented governments, academia, the private sector (i.a.WBCSD,

WEC, E7, Shell, BP, Verbund-Plan), international organisations (UNDP, DESA, FAO, UNIDO, UNEP, IIASA, IEA, IAEA, World Bank, ICSU) and NGOs. The meeting was co-sponsored by Austria, UNDP and IIASA. Financial support toward the participation of experts from developing countries from Norway,Sweden and LEAD is gratefully acknowledged.

Follow-Up

The report on the First Meeting of the GFSE will be circulated as an official contribution to the deliberations of the Commission on Sustainable Development on Energy in April 2001 and will also be submitted to UNCTAD in the lead-up to the Third Conference on the Least Developed Countries (LDC III) in May 2001 in Brussels.

Future Meetings of the GFSE

The usefulness of bringing together various stake-holders in a neutral and informal setting of the GFSE was generally acknowledged and the willingness was expressed to continue to cooperate on future occasions. A next meeting of the GFSE could study the respective roles of FDI and ODA in the context of facilitating the transfer of energy technologies. Provisions for holding such a meeting in 2001 have been made by the Austrian side. The decision about the topic will be taken in the light of the outcome of CSD 9. The readiness of the City of Graz to host a Meeting of the GFSE in 2002 was gratefully noted. In order to guide the future work of the GFSE an international advisory board will be electronically convened.

Report by the IISD on the First Meeting of the GFSE

A 10 000 word summary of the meeting, elaborated by the International Institute for Sustainable Development (IISD), is posted on the web: http://www.iisd.ca/linkages

For questions and comments on the GFSE

pleace contact the Convenor of the First Meeting of the GFSE

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Annex II

First meeting of the Global Forum on Sustainable Energy

Rural Energy: Priorities for Action

11 - 13 December 2000
IIASA Headquarters, Laxenburg, Austria

The Global Forum on Sustainable Energy (GFSE) is intended as a platform for multi-stake-holder dialogue on issues pertinent to energy for sustainable development. It grew out of the outreach efforts of the World Energy Assessment and is envisaged to orchestrate a series of dialogues that will facilitate decision-making on policy issues in the appropriate fora. The first event is dedicated to rural energy because of the urgent need to address the question of bringing modern energy services to the more than 2 billion people currently without access to modern energy. Its conclusions will inform the energy process of the Commission on Sustainable Development in 2001 and hopefully generate concrete cooperation endeavors in countries. The first event of the GFSE is also intended to build support for and design the work-plan for GFSE activities in the years ahead.

Monday, 11 December, 2000

9.00 a.m. **Welcoming addresses and brief introduction to the goals and objectives of the GFSE**

JOSE GOLDEMBERG (Chairman of WEA)
REPRESENTATIVES OF HOST-COUNTRY & IIASA

9.30 a.m. **Plenary I: Exploring the Linkages:**

„Rural energy and sustainable development"-
„Opportunities Emerging from New Technologies for Rural Energy" -
„Barriers to Investments in Rural Energy" *(followed by discussion)*

GERALD DOUCET (WEC)
ALBERT BINGER (AOSIS)
ANDERS WIJKMAN, MEP (SWEDEN)

CHAIR: JOSE GOLDEMBERG

11.30 a.m.	**Plenary II: Enabling Framework Issues for Attracting Investment for Rural Energy**
	(3 key note presentations of 15 min. each, followed by facilitated discussion)
	An Investor's Perspective: A: REUTER (VERBUND-PLAN)
	A Goverment's Perspective: ERNESTO LIMA (El Salvador)
	An E-7 Perspective: CHRISTIAN STOFFAES (E-7)
	A Bank's Perspective: M. HANDRICH (BANK AUSTRIA)
	CHAIR: CHARLES FEINSTEIN (WORLDBANK)
3.00 p.m.	Facilitated Discussion on Plenary II (continued)
4.30 p.m.	**Plenary III: Lessons Learnt** (CHAIR: PER ALMQVIST, Sweden)
	(10 minute-presentations of case studies)
	Case Study on ESKOM Rural Electrification in South Africa
	Case Study on LPG introduction in Senegal
	Case Study on UNDP Mali Project
	Case Study on solar energy in rural energy dev.
	Case Study on FAO projects in Nicaragua
	Case Study on Small Hydro Power Plants in Bhutan
	(*followed by short question and answer period)*
6.00 p.m.	Closure of the Discussion
7.30 p.m.	Public Panel Discussion and Reception (hosted by the Austrian Ministry for Agriculture, Forestry, Environment and Water Management)

Tuesday, 12 December 2000

9.00 a.m.	Main Messages from Day1 & Goals for Day2 (RAPPORTEUR GENERAL: LEE SOLSBERY)
9.15 a.m.	**Plenary IV: Financing Issues**
	(four key-note presentations of 15 minutes each followed by facilitated discussion) An Investor's Perspective KEN LOCKLIN (REEF)
	A Bank's Perspective CHARLES FEINSTEIN (WORLDBANK)
	A Donor Perspective: PHILIP MANN (EUR. COMMISSION)
	CHAIR: RICHARD BALLHORN (Canada)
12.00 a.m.	**Plenary V: Challenges and Opportunities of Regulatory Reform**
	(Introductory statements of 15 min. followed by facilitated discussion)
	PETER FRASER (IEA) MOSES ZAMA (Zambia) CHAIR: WIM TURKENBURG (NL)
3.00 p.m.	PHILIPPE DE RENZY MARTIN (SHELL SOLAR): On Shell's Experience
3.45 p.m.	Enabling Framework Issues for Attracting Investment for Rural Energy: **Regional** Priorities and Opportunities
	(Parallel break-out sessions by regions on policies regarding Framework Issues for Attracting Investment in order to address the challenges with regard to rural electrification, small industries, modern fuels for cooking, etc In each regional break/out session discussion would be facilitated and stimulated by an introductory presentation) Africa: FACILITATOR: STEPHEN KAREKEZI (Kenya) Asia :FACILITATOR: PACHAURI (India) Latin America and Caribbean: FACILITATOR: Roberto Macedo (Brazil)
Evening:	Reception hosted by the City of Vienna

Wednesday, 13 December 2000

9.00 a.m. Main Messages from Day2 & Goals for Day3 (LEE SOLSBERY)

9.15 a.m. **Plenary VI: Reports back from the Regional Group Sessions on Enabling Framework Issues, Financing and Regulatory Questions**

B. HOLDER (Germany) : Presentation of ISES-Project
CHAIR: JOKE WALLER-HUNTER (OECD)

10.30 a.m. **Plenary VII: Innovation**

(three introductory presentations of 15 minutes followed by discussion)

LARRY KOHLER (ICSU)
NEBOJSA NAKICENOVIC (IIASA)
ANDREI MARCU (IETA)

CHAIR: KURT E: YEAGER (EPRI)

12.00 a.m. **Plenary VIII: Interactive Panel on the Way Forward: Presentation of the Conclusions and Future Work Plan for GFSE**

KHANDU WANGCHUK (Bhutan)
RAJ PURI (BP)
THOMAS B. JOHANSSON, UNDP

CHAIR: IRENE FREUDENSCHUSS-REICHL (Austria)

2.00 p.m. Sandwich Lunch

3.00 p.m. Departure

Annotations:

An in-country dialogue is be envisaged for the follow-up of the regional discussion on Africa at the December meeting as suggested by the World Bank;key players for the in-country dialogue should particiate at the 1st GFSE event.

Background Documents for the First Meeting of the Global Forum on Sustainable Energy include:

- *World Energy Assessment (prepared by UNDP, WEC, UN-DESA, September 2000; web-site: www.undp.org/seed/eap/activities/wea)*
- *Energy for Tomorrow's World - Acting Now (published by WEC, 2000)*
- *Special Report on Rural Energy (published by WEC, 1999)*
- *Methodological and Technological Issues in Technology Transfer. A Special Report of IPCC Working Group III (2000)*
- *FAO; The energy and agriculture nexus, Rome 2000.*

Summary Papers will be commissioned for each of the substantive sessions; they will be circulated ahead of the meeting.

PLEASE ADDRESS ANY COMMENTS OR QUESTIONS TO:

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Annex III

Sustainable Developments
published by the International Institute for Sustainable Development

Volume 45, Number 1 Friday, 15 December 2000

A SUMMARY REPORT FROM THE FIRST MEETING OF THE GLOBAL FORUM ON SUSTAINABLE ENERGY (GFSE)

SUMMARY OF THE FIRST MEETING OF THE GLOBAL FORUM ON SUSTAINABLE ENERGY – RURAL ENERGY: PRIORITIES FOR ACTION 11-13 DECEMBER 2000

The First Meeting of the Global Forum on Sustainable Energy (GFSE) was held from 11-13 December 2000 at the Headquarters of the International Institute for Applied Systems Analysis (IIASA) in Laxenburg, Austria. The meeting, which addressed the topic of Rural Energy: Priorities for Action, was attended by more than 120 participants representing government agencies, United Nations bodies, business and industry, non-governmental organizations and academia. It was co-sponsored by IIASA, the United Nations Development Programme (UNDP), the City of Vienna and the Austrian Government (Ministry for Foreign Affairs and Ministry for Agriculture, Forestry, Environment and Water Management). Support was also provided by a number of other donors, including the Governments of Norway and Sweden and the Leadership for Environment and Development Foundation (LEAD).

The GFSE developed from outreach efforts related to the World Energy Assessment initiative, which was organized by UNDP, the UN Department of Economic and Social Affairs (UNDESA) and the World Energy Council. It is envisaged that the GFSE will provide a forum for a series of ongoing multi-stakeholder dialogues aimed at facilitating decision-making on energy policy issues in relevant fora.

Participants at this meeting convened in a series of plenary sessions to hear presentations and engage in discussions on: linkages between rural energy and sustainable development, enabling frameworks for attracting investment for rural energy; lessons learned; financing issues; challenges and opportunities of regulatory reform; innovation; and the way forward, including a work plan for the GFSE. They also met in parallel break-out sessions to identify regional priorities and opportunities in relation to enabling frameworks, financing and regulatory issues.

At its conclusion, participants considered the key messages and actions discussed during the meeting. The GFSE's outcomes will contribute to various negotiations and processes, including energy-related work being undertaken by the UN Commission on Sustainable Development at its ninth session (CSD-9) in April 2001. It is also expected to contribute to sustainable energy discussions at the Third UN Conference on Least Developed Countries taking place in Brussels in May 2001, and at the Ten Year Review of the UN Conference on Environment and Development in 2002.

REPORT OF THE FORUM

Irene Freudenschuss-Reichl, Ambassador, Permanent Mission of Austria to the United Nations (Vienna), welcomed participants to the First Meeting of the Global Forum on Sustainable Energy (GFSE) and introduced the opening keynote speakers.

Herbert Kröll, Ambassador, Government of Austria, said the GFSE's aim was to provide a platform to foster cooperation on sustainable energy among governments, energy companies, technology providers, investors, and non-governmental organizations. He noted that this first meeting was dedicated to rural energy issues, and highlighted the need to improve the situation of two billion people - living mainly in rural areas – who lack access to commercial energy. In addition, he highlighted the needs of the least developed countries (LDCs). He said this meeting would feed into negotiations taking place in various fora, including the Commission on Sustainable Development.

Arne Jernelöw, Acting Director, IIASA, drew attention to recent reports on energy and sustainable development and outlined IIASA's current research activities, including work on development and distribution of new technologies. Noting the importance of rural energy issues, he expressed the hope that this meeting would lead to more successful discussions on energy and sustainable development.

José Goldemberg, Chair of the World Energy Assessment, presented an overview of the findings of the World Energy Assessment, published in September 2000. He said the report addresses energy and the challenge of sustainability, and attempts to provide a "diagnosis" for problems related to achieving sustainable energy. It also addresses social, environmental, health and security problems resulting from present energy systems. Arguing that the present energy system is unsustainable, he said the Assessment considers requirements for a sustainable future, including energy efficiency, increased reliance on renewable energy sources, and advanced energy technologies, including next generation fossil fuel and nuclear technologies, if the problems and concerns associated with their use can be addressed.

On the report's treatment of rural energy, José Goldemberg said living standards in rural areas could be improved by promoting a shift from using biomass or coal in cooking to liquid or gaseous fuels. He also drew attention to the need to improve technologies for cooking with biomass, and to make progress in rural electrification. He noted that there had been both centralized, grid-based approaches to electrification, as well as a recent shift toward small-scale decentralized

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approaches. He said the Assessment also addressed new institutional measures, including financing. Drawing attention to the "energy ladder" of energy sources ranging from the most primitive to the most advanced, he said developing countries should be able to leapfrog some stages of development that had been followed in earlier decades by industrialized countries. He said the Assessment outlined a matrix of energy solutions in the short, medium and long-term based on sources and for various tasks, including cooking, lighting, motive power, and process heat. He stated that in addition to the environmental and development benefits of taking action, the profit-making considerations of business could be addressed by making energy more sustainable.

PLENARY I: EXPLORING THE LINKAGES

José Goldemberg chaired the Plenary session entitled "Exploring the Linkages," which was held on Monday morning, 11 December. Goldemberg explained that the focus was on exploring the linkages in relation to rural energy and sustainable development, including opportunities emerging from new technologies for rural energy and barriers to investment. He then introduced the presenters for this session.

PRESENTATIONS: Gerald Doucet, Secretary General of the World Energy Council, said sufficient studies had been conducted to understand rural energy issues, and suggested that the focus should now be on drawing out clear lessons and identifying actions. He highlighted energy as a key link in poverty reduction and stressed electrification as critical to development. He said the Council estimated that the number of people without access to commercial energy would increase from 1.8 billion now to 2.2 billion by 2020 based on current trends, and noted that the number of connections had fallen to 30 million per year during the 1990s. He said the goal of achieving 500 kilowatt hours of energy production per person per year by 2020 would require connecting 100 million people per year. The key issue was financing, with the extra capacity costing an estimated US$30 billion per year in additional investment. Highlighting the role of market-based solutions to rural energy problems, he said it was a business priority as well as a social issue to bring commercial energy to the one-third of the world's population that currently lacks access, while still cutting greenhouse gas emissions. He said the driver for energy efficiency was effective price and payments systems. He also stated that the World Energy Assessment could have carried out more work on regional collaborations, citing the benefits of progress on energy integration in Latin America. In addition, he said the GFSE could play a practical role in capacity building.

Albert Binger, Director of the Center for Environment and Development, University of the West Indies, highlighted problems facing rural populations in developing countries, including population increases resulting in pressure on the resource base, and income decreases from a relative decline in certain commodity prices. On sustainable energy, he noted the major implications for human health resulting from a reliance on animal dung and other solid fuels used for heating and cooking, which result in poor air quality. In addition, he highlighted the disproportionate costs of energy services in rural areas, asking how formal market solutions can effectively address non-formal market communities. He called for capacity building to develop expertise and said globalization should benefit rather than marginalize rural people. He drew attention to the impact of climate change on rural areas and noted that many industrialized countries did not appear to be on track in terms of meeting their greenhouse gas emissions targets set at Kyoto.

Andreas Wijkman, Member of the European Parliament, stressed that while a business approach could tap into a new market of potential commercial energy users, the rural poor are not generally part of the formal economy and therefore lack sufficient purchasing power. He indicated that the European Union treats the energy sector quite separately from development issues. He said only 10 percent of EU aid is for energy, and a small proportion of this relates to renewables and energy efficiency. He suggested that the majority of funding for rural energy development will need to come from the private sector and from international financial and trade institutions – including export credit agencies – that are not yet guided by social considerations. He said environment and development agencies should coordinate with trade and finance bodies, and synergies and links between the different sectoral development plans need to be understood. Furthermore, the Group of Eight (G-8) should provide funds to lower prices in key technologies to promote development. He concluded by stating that this meeting was an important step toward achieving broad stakeholder dialogue.

DISCUSSION: In the ensuing discussion, a participant suggested raising the profile of the energy-development link by promoting it as an issue within the World Trade Organization. In response to a comment on the importance of mobilizing political pressure among the public and a suggestion that the rural poor required assistance in developing the capacity to lobby effectively, Andreas Wijkman noted insufficient capacity in the UN and other international organizations to meet capacity building needs. Another participant added that currency devaluation is further impoverishing developing countries.

On Tuesday afternoon, 12 December, participants heard an additional presentation on linkages by Philippe De Renzy Martin, CEO, Shell Solar. He described the activities of Shell Solar, which he said focused on the customer and worked back to technology. Although he said rural developing country markets could be viable in the long-term, they are not profitable currently and most sales are dependent on subsidies. However, he stated that solar energy is part of Shell's long-term alternative energy strategy. He said incentives are vital at this early stage, and subsidies should apply at the customer interface to stimulate demand. For solar to be sustainable there has to be an ongoing commitment that includes distribution and maintenance. In response to a question about reaching a point where a subsidy is not required, Philippe De Renzy Martin said he thought a recent estimate that the costs of photovoltaics would fall by 80 percent by 2004 was too optimistic. He speculated that a 50 percent decline over ten years might be more realistic.

PLENARY II: ENABLING FRAMEWORK ISSUES FOR ATTRACTING INVESTMENT FOR RURAL ENERGY

On Monday, 11 December, Plenary II session Chair Charles Feinstein, World Bank, explained that participants would hear presentations and engage in discussions on enabling framework issues for attracting investment in rural energy. He also drew attention to the Village Power 2000 meeting held from 4-7 December 2000 in Washington DC, which developed a series of goals, including bringing energy to 300 million consumers over the next decade.

PRESENTATIONS: Albrecht Reuter, Division Manager, Energy and Grid Management, Verbundplan, provided an investor's perspective on enabling framework issues for attracting investment for rural energy. He said electrification can increase the overall efficiency of energy systems and so contribute to sustainable development. On policy challenges, he said governments should provide predictable macroeconomic and environmental policy frameworks to attract investment, and must reduce market risks and transaction costs. He said sustainable energy technologies could be encouraged by withdrawing subsidies for

conventional fossil fuels and including externalities in energy prices. He also highlighted the need for technology transfer and said the Kyoto mechanisms could play an important role in this regard.

Ernesto Lima, Superintendencia General de Electricidad y Telecomunicaciones, El Salvador, presented the government's experience in reforming its electricity generation sector. He said the government was responsible for electricity production and distribution until privatization began in 1996. However, he suggested that privatization has done little to encourage rural electrification programmes, since distribution companies focus on existing infrastructure and commercial services. He said the Fondo de Inversión Nacional en Electricidad y Telefonía (FINET) had been established in the late 1990s to promote and manage financing of new electrification programmes. He noted the need for, *inter alia*: a clear strategy, innovative financing mechanisms, political support, leadership, project identification procedures and encouragement by FINET for financing agencies to support rural electrification.

In response to a participant's question, he said the keys to the success of the reform process included privatization and maintaining government control of hydroelectricity production and transmission. On lessons learned, he said appropriate regulatory agencies and experience are prerequisites for privatization, and that the obligation to serve should be included in the privatization legislation.

Christian Stoffaës, Electricité de France, presented the rural electrification experience of the E7 group of major electricity companies (Edison International, Enel, Electricité de France, Hydro-Québec, Kansai Electric Power Company, Ontario Power Generation, RWE Group and Tokyo Electric Power Company). He highlighted the need for a new approach based on social trust. This involves a partnership between companies and communities that enables all stakeholders to be involved in and benefit from the process and reduces costs in the long term. He said rural electrification must be economically and financially viable and linked to development. The costs and benefits should be assessed based on development benefits, such as avoided rural-urban migration. He noted the importance of capacity building to enable people to pay for, use and maintain the commercial energy system. He said the goal of access to electricity for all could be achieved within five years.

Martin Handrich, Bank Austria Energy Team, presented a bank's perspective on investing in developing country energy infrastructure. He explained that, unlike development banks, commercial banks are responsible to shareholders and investors for returns on their investment. He said barriers or disincentives to investment include inconsistent energy sector performance and inappropriate project structures and risk-sharing arrangements where country political risk is high. He suggested that governments could improve the investment climate through market liberalization, privatization, unbundling of production from distribution, elimination of energy subsidies, respect for the rule of law, and facilitation of consumer choice. However, he noted that privatization and liberalization by themselves do not provide a complete solution. Stating that much of the world gets its electricity from large power plants far from consumers, he said off-grid solutions are becoming cost-effective and highlighted the importance of tailoring solutions that take into account specific local circumstances.

DISCUSSION: In the ensuing discussion, a participant from Burundi's Ministry of Energy and Mines stated that capacity to pay should not be the requirement for energy access. Highlighting economic constraints in many countries, he said every person has a right to access electricity. A World Bank representative emphasized the importance of maximizing consumer choice, and said the Bank had in the past been too specific in some cases in trying to mandate a particular technological choice. In response to a question on sources of funding if private sector investment is inadequate, Christian Stoffaës replied that one source may emerge by linking development objectives to global environmental objectives, through instruments such as the Kyoto mechanisms.

In response to a request from session Chair Charles Feinstein for clarification on additional investment for rural energy, José Goldemberg noted that investments in rural energy already total $30 billion per year, but said the challenge is to find an additional $30 billion per year by making it attractive for the public and private sector to invest. Several participants noted that the energy sector is substantial and investment-intensive, and stated that while the resources exist, the right investment structures and political will are necessary to mobilize them. A number of participants pointed out that early in the 20th Century, cross-subsidies were used in industrialized countries until the income generation resulting from the availability of electricity was sufficient to enable consumers to pay. The discussion also raised the possible lesson to be drawn from the widespread use of wireless telecommunications technologies in rural areas.

In response to a comment from the floor, Albrecht Reuter cautioned against classifying technologies as either good or bad, and highlighted specific purposes and situations affecting appropriate energy sources. Pointing to the existence of some "hidden agendas" in aid and development assistance, one participant referred to energy projects that involve installation of high-technology goods from Northern suppliers, which might erode the positive impact of development funds. He said it was important to identify a methodology for identifying solutions, rather than seeking to provide solutions. Another participant raised issues relating to energy demand, noting that it was necessary to separate monetised and non-monetised demand and that rural areas are not homogeneous. She highlighted the potential role of consumers in articulating demand, noting the role of consumer groups in the electrification of North America. In addition, a number of speakers noted that energy system planning should be needs-driven, rather than technology driven.

PLENARY III: LESSONS LEARNED

On Monday afternoon, 11 December, Per Almqvist, Swedish Ministry of Foreign Affairs, chaired the Plenary session on Lessons Learned, noting that there would be seven presentations on specific case studies.

PRESENTATIONS: Rob Stephen, Consultant, ESKOM, discussed rural electrification in South Africa. He outlined a programme that had electrified 1.75 million households from 1995-1999, mostly in rural areas, simultaneously reducing costs per connection by more than 50 percent in real terms. He said the programme was the result of a compact with government. Factors contributing to the programme's success included social interventions such as electrification committees, a process that evolved with experience and changing circumstances, and technical interventions. He said clear goals and objectives were needed, as well as a holistic approach.

Youba Sokona, Environnement et développement du tiers-monde (ENDA-TM), Senegal, discussed the introduction of the Liquefied Petroleum Gas (LPG) Programme in Senegal, which set out to substitute LPG for charcoal. He said measures to support this programme include the design of gas stoves to meet local needs, removal of taxes on imported equipment, and a price policy aimed at making LPG more affordable. LPG consumption increased from less than 3,000 tonnes in 1974 to almost 100,000 tonnes in 1999. He said lessons learned include

the impact government policy can have on fuel consumption patterns, and the fact that LPG expansion has not resulted in the disappearance of traditional fuels such as charcoal, although it has diversified energy sources.

Laurent Coche, Regional Coordinator, UNDP, discussed the Multi-functional Platform concept for energy developed in Mali. He said the Platform seeks to address poverty among rural women by providing a simple source of energy – a basic diesel engine that can power a variety of different tasks, including cereal grinding, dehusking and carpentry, as well as generate electricity for pumping water, lighting, welding and charging batteries. He said the simplicity, sturdiness and multiple applications of the engine provides a positive example of appropriate multi-functional technology.

Cahit Gurkok, UN Industrial Development Organization (UNIDO), outlined UNIDO's sustainable rural energy programme. He provided information on technical cooperation projects relating to: a Multipurpose Platform for rural energy development; fuel wood replacement and briquetting; charcoal production from wood waste and cotton stalks; biogas production; integrated biosystems; photovoltaics for solar power; micro- and mini-hydro power; the application of advanced techniques, such as remote sensing, for mini-hydro development; wind energy applications; and hydrogen energy for rural development. He highlighted the potential of high-end technologies.

Ronald Bowes, US Department of Energy, described the Energy Efficiency 21 Programme in the Balkans. He noted problems such as blackouts, heating fuel shortages and air pollution faced by cities including Sofia, Skopje, Bucharest and Belgrade. He explained that the programme operates at the regional, national and local levels and involves governments, municipalities, utilities, the private sector and key non-governmental organizations. An internet service based in Sofia connects municipalities, with the aim of creating a critical mass of projects and providing information to investors.

Gustavo Best, Senior Energy Coordinator, UN Food and Agriculture Organization (FAO), presented a case study of biofuel production from bagasse and eucalyptus at a sugar mill in Nicaragua. He said the project combined forestry, agriculture, energy and environmental elements. Key lessons included the importance of integrating stakeholders into the project, conducting technical and economic analyses, maintaining support for the initiative through information dissemination and selecting the appropriate fuel alternative. The study demonstrated, *inter alia*, the need to avoid land competition between energy and food production.

Sonam Tshering, Ministry of Trade and Industry, Bhutan, made a presentation on small hydropower in the Himalayas, focusing on Rangjung hydro power in Eastern Bhutan. The project aimed to provide rural electrification and had a number of other social and environmental objectives, including reducing rural to urban migration, improving people's health and reducing fuel wood consumption. Lessons learned included the need to encourage community participation, the importance of engineering studies on the hydrological regime of the river in order to ensure optimum project design, and the benefits of rural electrification to women's health and quality of life, education standards and the local economy.

OVERVIEW OF DAY I: PLENARY SESSIONS I - III

On Tuesday morning, 12 December, Forum Rapporteur Lee Solsbery, World Business Council for Sustainable Development (WBCSD), provided a synopsis of key issues discussed in the Plenary sessions held on 11 December. He noted a clear diagnosis of the problems relating to rural energy and said there appeared to be a strong feeling that this meeting should outline a concrete approach and recommend actions for addressing these problems. He said key points relating to the diagnosis included that: energy is critical for achieving sustainable development and is not simply a sectoral issue; clean affordable energy supports a range of development goals; almost two billion people are without access to non-traditional energy; an additional US $30 billion per year in investment is required between now and 2020 to address this problem; new methods must be found to bring adequate sustainable energy to developing countries through appropriate technologies and increased efficiency in production and end-use applications; obstacles include issues of cost and the need to leverage significant new private investment; and public finance can play a key role.

He then identified a number of practical factors that should be addressed, including market reform, pricing and payment structures for rural energy, the low income of many without access to energy, and the challenge of matching local affordability to the commercial need to achieve adequate returns. Technical issues requiring attention included the need to make photovoltaics more affordable, commercialize micro and mini hydro, and train local people in technology application and operation.

Lee Solsbery also listed key policy issues, highlighting: adequate funding of the Global Environment Facility (GEF), official development assistance (ODA) and other public sources; cooperation and communication among actors from key sectors; public money and regulatory reform to stimulate commercial investment; and different countries' specific situations and needs. Finally, he listed priority actions, including identifying areas where energy demand can be monetised, creating the right framework conditions for private investment with public partnerships, and assuming greater penetration of private money in markets where commercial conditions are likely to be robust. He said remaining needs could be addressed through public finance or concessional approaches.

In the subsequent discussion, one speaker underscored the importance of political will in making progress. Responding to a question about the sources of funding, Lee Solsbery noted a variety of funding options and drew attention to the Clean Development Mechanism (CDM) of the Kyoto Protocol to the UN Framework Convention on Climate Change as a new source.

PLENARY IV: FINANCING ISSUES

This Plenary session convened on Tuesday morning, 12 December, and was chaired by Richard Ballhorn, Department of Foreign Affairs and International Trade, Canada.

PRESENTATION: Ken Locklin, Energy Investors Funds (EIF) Group, provided an investor's perspective on financing for rural energy. He noted the opportunities for investment in small-scale rural energy services. He said small projects must address high risks, significant up-front and transaction costs, externalization of environmental benefits, and limited local entrepreneurial capacity. Solutions to these obstacles include: blending funding sources; using proven technologies and suppliers as well as strong partners; standardizing documents and underwriting criteria; and seeking niche markets, concessionary support, and carbon credits. He said the EIF Group has adapted project finance and risk management to small-scale projects, with the aim of achieving an overall rate of return comparable to that of conventional energy. He outlined the Renewable Energy and Energy Efficiency Fund (REEF) that invests in commercial scale projects in 34 countries. A key challenge is to assist rural energy delivery companies (REDCOs) in

non-commercial scale projects. He cited the example of E&Co, an energy investment service that assists REDCOs. To underline the problem of scale, he said REDCOs will achieve critical mass when they collectively service 60 million households. Assuming a single REDCO can service 1000 households, there is a need for 60,000 such companies. About 30,000 of them may require outside assistance. If an energy investment service can reach 300 REDCOs, at least 100 energy investment services are needed; E&Co is only one of them.

DISCUSSION: In the subsequent discussion, a participant highlighted the investment bias toward high-technology renewables even where local alternatives, such as biomass, exist. It was noted that the private sector uses technologies that make commercial sense and investors spread resources across a range of technologies. In response to a question on enabling frameworks, Ken Locklin said transparency, low transaction costs and government acceptance of private investment are important. On sustainability of projects, participants noted the need both to integrate lessons learned into local institutions, and to avoid creating an expectation of free energy among consumers, which undermines the efforts of local entrepreneurs.

PRESENTATION: Charles Feinstein, World Bank, focused on subsidies and sustainable rural development. He said a challenge is to create incentives without distorting markets, and argued for temporary, well-designed subsidies for rural energy. New models for intervention, such as Chile's Rural Electrification Fund, are promising. He noted that poor people spend 10-20 percent of their income on energy, whereas the wealthy spend two percent. Subsidies can be appropriate where they leverage large welfare gains. A case study of the Photovoltaics Market Transformation Initiative (PVMTI) in India, Kenya and Morocco demonstrated the usefulness of subsidies, which increased the profitability of 13 projects by an average of five percent. He said undesirable subsidies are those that: provide an implicit reward for non-payment; are untargeted and indiscriminate; drain scarce public resources; and destroy commercial incentives. Subsidies should reach the poor and target access costs rather than consumption. He provided information on the Energy Sector Management Assistance Programme (ESMAP) and the Village Power 2000 conference held from 4-7 December, 2000.

DISCUSSION: The subsequent discussion focused on the sources and purposes of subsidies. Participants noted that subsidies should: leverage, not crowd out, private funds; correct market failure and promote eventual economies of scale; expand the options available to consumers who are paying more than they should for poor quality energy; be transparent and not open-ended; and be temporary and involve an exit strategy to avoid creating dependence.

Several respondents asked for elaboration from Charles Feinstein on his conditional support for energy sector subsidies, in the light of the World Bank's standard loan conditions of market liberalization and general subsidies elimination. Feinstein explained that subsidies for development directed toward industries from the North would not be supported by the Bank, and that the same approach would apply to any subsidy that undermined market potential. He noted that renewable energy projects do not go forward unless rates of return are comparable to those of conventional options such as diesel or kerosene. He also highlighted some World Bank efforts – such as in Chile, Uganda and Zimbabwe – that have included the establishment of rural electrification funds.

PRESENTATION: Philip Mann, European Commission, presented a donor's perspective on energy. He outlined the Commission's new development policy, framed in terms of poverty reduction and social and environmental goals. He stated that energy is an issue common to all six strategic areas of the new policy, which are trade, regional integration, macro-economic support and social sectors, transport, sustainable rural development and good governance. However, energy is not singled out for separate treatment. He said promoting energy as a means for development is often best achieved through leveraging funds in partnership with private sector firms and civil society, and focusing on energy projects in support of education, water supply, prevention of rural migration and other development needs.

DISCUSSION: Several participants urged that the provision of energy services be needs driven, involving beneficiaries in technology choices, rather than tied to a particular technology. Charles Feinstein underscored the difficulties that renewables face in attracting investment due to their high initial outlay and benefits that accrue slowly over their lifecycle, factors that are not competitive for investors with high discount rates. Means for offsetting these difficulties include partial credit guarantees and "take-out financing." While investment tax credits and accelerated depreciation are used in developed countries to support energy efficiency investments, Feinstein pointed out that barriers to energy efficiency investment are due to information asymmetry and transaction costs, not economic fundamentals.

PLENARY V: CHALLENGES AND OPPORTUNITIES OF REGULATORY REFORM

This Plenary was held early Tuesday afternoon, 12 December, and was chaired by Wim Tirkenburg, Faculty of Chemistry, Utrecht University, who emphasized the need for an appropriate regulatory framework and introduced the two presenters.

PRESENTATION: Peter Fraser, International Energy Agency, made a presentation on electricity market reform in the OECD. Noting that the process of energy market liberalization had started in most OECD countries in recent years, he outlined the benefits of liberalization, including increased economic efficiency. He then outlined causes of liberalization, features of reforms, preliminary conclusions in terms of impact on consumers, and the changing role of government, including the emphasis on independent regulation. He also highlighted the significant impacts of liberalization on public policies relating to energy security, pollution control, renewables and cross-subsidies. In terms of rural consumers and liberalization, he noted the high costs per kilowatt hour, cross subsidization, and the opportunity for subsidy reform to provide incentives for investment in more cost-effective solutions. On lessons from the OECD experience, he highlighted the need to: elaborate a clear policy and legal framework; restructure companies and initiate price reform prior to liberalization; empower the end user; and ensure effective independent regulation. On the implications of reform, he drew attention to the emergence of new private, global players, new technologies, and the need for innovative institutions and mechanisms for meeting public policy objectives and promoting investment.

DISCUSSION: In response to a question on the impact of liberalization on renewables, Peter Fraser said there had been a greater focus on renewables as a result of reform. He noted, however, that energy utilities had traditionally conducted most research and development, and questioned who would engage in such activities in the future.

PRESENTATION: Moses Zama, Energy Regulation Board, Zambia, described energy sector regulatory reform in Zambia. He said reforms should expand public access to energy and help meet rural development needs. The policy environment and legal framework must be clear, stimulate investor confidence, and promote autonomy and accountability of regulatory bodies and energy enterprises. He

explained that the Energy Regulation Board, established in 1995, uses license-based regulation and is funded by fees paid by companies and grants from donors. The decision-making process reflects the importance of transparency, independence, stakeholder input and external communication. He emphasized the role of capacity building and learning by doing. He said the way forward involves: enhancing regulatory independence, improving regulation, increasing consumer participation in the energy sector and supporting sustainable rural and peri-urban development.

DISCUSSION: Participants then discussed: the need for competitive tariffs and the potential for tariff differentiation to enable cross-subsidization; the licensing requirement that companies explain how they will make profits and expand the grid; and the advantages of liberalization in reducing risk. A participant pointed out the challenge of attracting investment in rural areas in countries with depreciating currencies, high inflation and decreasing income. Moses Zama noted that, as a first step toward unbundling the electricity monopoly in Zambia as part of liberalization, the Energy Regulation Board requires it to report separately the different parts of its business.

OVERVIEW OF DAY 2: PLENARY SESSIONS IV & V

On Wednesday morning, 13 December, Forum Rapporteur Lee Solsbery, WBCSD, provided a synopsis of key issues discussed in the Plenary sessions held on 12 December. He drew attention to technical, practical and policy issues to be addressed, and noted that increased private investment will only occur in markets where commercial conditions are robust, which will have implications for immature markets. He also noted participants' comments on: the use of public money and regulatory reform to help reduce prices and stimulate investment in growing developing country commercial markets; the need to tailor solutions to different situations; the idea that public finance, including appropriate subsidies, should be required when commercial grade investments are absent; and the question of how export credit agency lending can promote sustainable energy technologies to reach rural areas.

He then identified a range of suggested priorities including:

- adopting a two-pronged strategy with private and public elements;
- leveraging public funds to create functioning private markets in developing countries' energy sectors;
- establishing a "political risk co-finance facility" to address investment barriers in developing countries;
- encouraging developing countries to introduce regulatory systems to promote rural energy access;
- mobilizing credits under the CDM to add a new revenue stream;
- providing seed capital and enterprise development;
- supporting a new Donor Pledge to target funds to leverage market changes and avoid competition with private funding;
- supporting donor meetings to target rural energy and discuss the appropriate role of subsidies;
- avoiding the "one size fits all" approach and applying tools as appropriate;
- inviting key private sector representation into the UN Intergovernmental Coordination process;
- using donor coordination groups to define and implement Export Credit Agency policy addressing rural needs;
- agreeing on a concrete action plan at CSD-9;
- agreeing on the aim of halving as soon as possible the number of people without access to modern energy;
- considering appropriate transition approaches to facilitate sustainable energy paths; and
- utilizing synergies between greenhouse gas reduction strategies and modern energy services.

PLENARY VI & REGIONAL GROUP SESSIONS: ENABLING FRAMEWORK ISSUES, FINANCING AND REGULATORY QUESTIONS

On Tuesday afternoon, 12 December, participants divided into three parallel regional break-out groups to consider enabling framework issues, financing and regulatory questions from a regional perspective and regional priorities and opportunities. The follow-up to these regional group sessions took place on Wednesday morning, 13 December, when participants met in Plenary to hear reports from these regional group sessions.

AFRICA: On 12 December, the regional group session for Africa was opened by Facilitator Stephen Karekezi of the African Rural Energy Enterprise Development Initiative. He presented his organization's experience in assisting entrepreneurs in the energy sector while mitigating climate change. Challenges included widening access, scaling up successes and stimulating markets. He said energy systems should reduce inequity, attract investors, protect the environment and work with national policies and through partnerships between non-governmental organizations, public and private sectors.

Participants examined the factors essential to successful rural energy service provision and the difference between this and rural electrification. They discussed various energy technologies and their merits, the need for analytical work and pilot efforts, the use of energy to stimulate local production, and the value of learning from and harnessing the informal sector.

On finance, participants noted that rural energy provision in Africa requires adequate, sustained funding that is unlikely to be provided entirely, or even largely, by the private sector. Some participants suggested that local resources and microcredit could readily be mobilized, while others noted that national monopolies are more likely than privatized electricity generators to invest in rural electrification and energy efficiency. It was noted that, while ODA will play a critical role, new sources of funding – such as the GEF and CDM – will be required. Participants also acknowledged the potential of access subsidies, user fees and public-private partnerships.

On national energy policies, they stressed bottom-up approaches based on local needs, political will and coherent institutional and legal frameworks. The possibility of establishing a rural energy agency was raised. In addition, participants underlined the need for information dissemination and capacity development related to policy making, entrepreneurial skills, technology transfer and learning from other projects and sectors.

In Plenary on 13 December, Session Rapporteur Youba Sokona, ENDA-TM, summarized this discussion, emphasizing the critical roles of institutions and public finance.

ASIA: R.K. Pachauri, Tata Energy Research Institute, facilitated the regional group on Asia, which met on 12 December. He characterized Asia as an extremely diverse region with one billion people who lack sufficient energy and face significant policy, financial and technical constraints. Participants emphasized that energy should form part of an overall development strategy that expands access to markets, enhances living conditions and boosts income. They then discussed the experiences of Pakistan, India, Bhutan, Indonesia, Thailand, Papua New Guinea and Kiribati. They discussed the importance of local contexts in

determining the mix of public and private sector funding, community consultation and capacity building, and consumer ownership or payment for electricity. It was noted that Asia is characterized by a large domestic business sector, high overall population density with large sub-regional variations, and the existence of a grid in many rural areas that is not serving communities. It was noted that opportunities exist for connecting rural electricity sources, such as micro-hydro, to the grid and selling surplus electricity.

R.K. Pachauri then outlined a five-pronged framework for rural energy comprising microfinance, local government structures, technology selection, regulatory and policy frameworks, and private sector involvement. On microfinance, participants stressed: the need for innovative mechanisms; distribution of risk, including among governments, banks and local cooperatives; the role of government in promoting an enabling environment and of non-governmental and intergovernmental organizations in delivery; minimization of overhead and direct access to funds; and the need for the community to share the financial burden.

During the discussion on structures, several participants suggested that local entrepreneurs were the primary actors. They highlighted the need for training and support of local-level entrepreneurs to create businesses, local capacity and leadership. A participant cited the examples of Coca-Cola and Pepsi, which maintain efficient supply and distribution networks even in remote areas.

On the role of technology, participants discussed the need for demonstration and pilot projects to facilitate objective comparisons between technologies and the importance of understanding local needs. They stressed that rural electrification should be accompanied by a comprehensive economic package including telecommunications, health care and training. This necessitates cooperation at all levels and among several ministries.

On regulatory structures and enabling policies, participants underscored the role of economic and fiscal incentives, the importance of appropriate regulations and the need to sensitize governments to the benefits of such policies.

On private sector involvement, participants underlined the need for an adequate rate of return on energy investments and the role of public financing in stimulating private investment. Exchange rate fluctuations and country risk often inflate the required rate of return for an outside investor to as much as 45 percent. There is a need to attract local companies, which might not be so constrained by these factors.

It was noted that multinational investors may be trading immediate returns for longer term consolidation of market access and value from environmental branding. Rapporteur Jayarad Gururaja, UNDESA, summarized this discussion in Plenary on 13 December.

LATIN AMERICA AND THE CARIBBEAN: This regional group met on 12 December and was facilitated by Roberto Macedo, University of Sao Paolo, Brazil, who outlined Brazil's experience with LPG use for cooking. This technology has an extremely high market penetration, with LPG stoves in 97 percent of households. He suggested that the popularity of LPG can be attributed to portability of bottles, high safety standards, convenience compared to wood, affordability and an excellent distribution network. Participants noted the need for a national framework in introducing LPG, and that LPG use should be viewed as a transitional step towards sustainable energy. Monica Servant, Technical Assistance Manager, Ministry of Economy, Argentina, made a presentation on energy privatization in Argentina and its impact on renewable energy. She discussed the aims, methods, structures and outcomes of privatization, paying particular attention to rural electrification.

In the discussion that followed, participants stressed that: energy initiatives require a consultative process; a strong, competent and independent regulatory framework is needed; privatization should promote rather than hinder sustainability; and a social dimension is essential. Participants also highlighted the need for solutions based on individual circumstances. Financing, subsidies and funding issues were discussed at length, with one suggestion that national governments establish entities to channel external resources such as GEF funding. The potential role of the CDM was highlighted. Participants also discussed the role of the UN and of CSD-9 in developing rules or principles governing rural energy. Key messages from the group included the view that no single model fits all circumstances, rural energy issues cannot be addressed in isolation, and peri-urban areas and the interfaces between rural, peri-urban and urban areas should be considered. It was also noted that governments should promote rural development at the political level. At an international level, there was call for a global energy charter or codex on rural energy, with the first step being the establishment of a set of principles.

On 13 December, Rapporteur Gustavo Best, FAO, reported to Plenary on the Latin America and the Caribbean group session.

DISCUSSION: In the discussion following the reports of the regional sessions on 13 December, participants identified common elements from the three workshops, notably: a focus on rural energy services rather than simply rural electrification; the need to integrate energy services within a broader development approach; and the importance of community needs and input.

One participant cautioned that development of a world energy "charter" might be premature and favored a more flexible "codex" style approach based on agreed principles.

Participants debated whether the emphasis on integrating energy and development risked undermining the importance of energy and detracting from investment in this sector. It was noted that in Asia, bundling energy services with other development services has proven cost effective. Experience in Africa showed that focusing only on electrification, and failing to consider other aspects of development, did not reduce poverty levels. It also demonstrated a need to align energy strategies with other services such as water. One participant suggested that, since national governments have a responsibility to provide energy, they should contribute a portion of the costs as a means of leveraging funding from other sources.

Following this discussion, Burkhard Holder, International Solar Energy Society (ISES), gave a presentation on ISES' project on Exemplary Models for Energy Supply of Rural Areas Using Renewable Energy. He stated that in most rural areas, grid extension is not a viable option, as it is too expensive for low consumption loads. He suggested that decentralized solutions, such as solar home systems, were more appropriate. He outlined five approaches to financing: cash purchase, credit purchase, leasing, fee for service and pilot projects.

PLENARY VII: INNOVATION

The session on "Innovation" took place on Wednesday, 13 December. Session Chair Kurt Yeager, Electric Power Research Institute, opened the meeting and introduced the presenters.

PRESENTATIONS: Larry Kohler, International Council for Science, made a presentation on institutional innovation. Noting that technological constraints are seen as more urgent than institutional constraints, he stressed that institutional innovations are nevertheless essential for adapting and disseminating existing rural energy technologies. He supported examining institutional roles, capacities and

constraints and assessing changing institutional needs as part of the CSD process. He also called for innovations within existing institutions, and said new institutions should be established only when absolutely necessary. He said the scientific community should enhance its role in the transfer of scientific and technological information and the development of local scientific capacity. He confirmed that the International Council for Science is ready to build on the CSD-9 experience and expressed support for a new energy-related scientific research initiative to support sustainable rural energy objectives.

Nebojsa Nakicenovic, Project Leader, Transitions to New Technologies, IIASA, discussed technological change in relation to rural energy systems. He considered scenarios for the year 2070 in terms of technology development and diffusion and rural energy use, noting the continuation in some cases of traditional energy sources in rural areas. He outlined stages of development referred to in the World Energy Assessment, namely research and development, use of demonstration projects, early deployment and widespread dissemination.

Stressing that 1.5 billion people live on less than one dollar per day and that technology diffusion takes at least 20 years, he said efforts to "leapfrog" rungs of the energy ladder should aim to "jump to the top" of this ladder. He said minimizing the distinction between rural and urban diffusion would be helpful. Recommended actions include capacity building and ensuring an appropriate environment and necessary mechanisms for private and public technology transfer activities.

Andrei Marcu, International Emissions Trading Association, discussed rural electrification, which traditionally has been a state-sector activity. Unbundling, deregulation, globalization, privatization and technological changes allowing decentralization and lower levels of capitalization have led to a redefinition of the role of the state. He said rural electrification is not profitable and necessitates new mechanisms including: combining rural electrification with rural telecommunications; targeting demand and supply; and using the CDM. He cited case studies in which revenues from Certified Emissions Reductions reduced project costs by 2-20 percent, depending on the ultimate cost per tonne of CO_2. He suggested that the road ahead will involve improving institutions; removing subsidies on some energy sources; optimizing regulatory frameworks; removing the CDM levy for rural electrification projects; quantifying the environmental benefits; and building capacity.

DISCUSSION: In the ensuing discussion, a participant asked for elaboration on the convergence of technology transfer and diffusion. Nebojsa Nakicenovic said both are critical and noted the value of economies of scale and market size in diffusing technologies. Participants also highlighted the need for capacity to address regulatory issues. On a question relating to energy technology leap-frogging, Andrei Marcu cautioned that it should not be carried out indiscriminately. A participant from Indonesia noted her country's experience in privatization of the electricity sector, where rural electrification ultimately remained in government hands because it was unprofitable. Nebojsa Nakicenovic cautioned against a centrally-planned approach. He said it is crucial to invest enough resources to enable the players to implement options in a decentralized way.

Kurt Yeager concluded by underscoring the potential for innovation, saying it requires a new vision, political will and enlightened self-interest on the part of developed countries. He remarked that $30 billion is less than the world spends on cigarettes, so is not an unreachable target. Universal electrification should be an immediate priority, since the two billion people currently without electricity could become five billion by 2100. He said old technology will "doom communities and economies to obsolescence," and advocated using electrification to bring people into the digital economy. The technology of the new economy is efficient and can provide a platform for assimilating into the global economy at whatever level suits the local community. He concluded with a quote from a wall of the US House of Representatives: "Where there is no vision, people perish."

CLOSING PLENARY

The final Plenary convened Wednesday afternoon, 13 December. Participants heard concluding remarks from a panel and discussed the key messages and outcomes of this meeting, the way forward, and a future work plan for the GFSE.

Irene Freudenschuss-Reichl, Ambassador, Permanent Mission of Austria, opened the final Plenary and drew delegates' attention to Rapporteur Lee Solsbery's synopsis of key issues raised. She said the Rapporteur's final report of the meeting and this IISD *Sustainable Developments* report would form the written outcomes of the meeting and would be distributed at CSD-9 and other relevant upcoming meetings. She highlighted some of the issues raised, including the view that a two-pronged approach involving the private and public sectors is required. She also noted a clear sense that strategies for rural energy would dovetail with strategies to curb greenhouse gas emissions. Text written by Thomas Johansson, UNDP, was distributed proposing a target of reducing the number of people without access to affordable clean fuels and electricity to a maximum of 500 million by 2015. Irene Freudenschuss-Reichl then invited the panelists to comment on key issues raised during the Forum.

PANELISTS: Khandu Wangchuk, Ministry of Trade and Industry of Bhutan, highlighted poverty elimination as a major goal and said sufficient and affordable access to energy can have an impact. He noted the far reaching consequences of rural electrification, the extensive debate at this meeting on ways and means to address rural energy issues, and the sentiment expressed by many participants that solutions must fit local needs. He called on the international community to support LDCs and developing countries in their efforts to provide energy for the rural poor.

Raj Puri, BP, said this meeting had been an excellent learning experience and highlighted the role of the private sector. Noting private sector concerns about the lack of profitability from its current involvement in this area, he said business nevertheless recognized that the future lay in providing sustainable energy – the issue was simply how to achieve this cost-effectively. He said synergies that tap into current company infrastructure and activities could be developed.

Philippe De Renzy Martin, Shell Solar, drew attention to three key actors in sustainable energy: local government, local marketing operations and offshore multilateral and bilateral subsidy providers, whose processes he said should be streamlined. He noted that not everything could be achieved at the same time and urged that progress be made where and when possible.

Thomas Johansson, UNDP, stated that the basic idea behind this meeting had been to establish a stronger dialogue among stakeholders, and said discussions had been productive. He praised Rapporteur Lee Solsbery's list of actions, suggesting that several actions should be prioritized from the long list, for instance, the reference to bringing new technologies to bear and tackling the very low incomes in rural areas of developing countries. He also noted that leapfrogging is both a technological and institutional issue.

DISCUSSION: Participants discussed the question of setting specific rural energy targets. One speaker stated that reaching 1.5 billion people in 15 years is a significant undertaking given finite resources,

and supported a bottom-up approach that would allow developing countries to list their rural development priorities. However, an alternative view was that an additional $30 billion investment had to be considered in the light of current annual investments in the energy sector of $300 billion. Participants also considered the respective roles of the public and private sectors, with one speaker reinforcing the critical role of the public sector and the need to increase ODA levels.

Delegates also reiterated a number of specific issues, including: the potential role of LPG in providing for some of the basic needs of the rural poor; the need for clear language on the "new role" of ODA as a catalyst for private sector investment; the benefits of a clear focus on rural energy and the potential role of an inter-agency body or secretariat to coordinate work in this area; and the view that both conventional energy and renewables should form part of the solution.

CLOSING REMARKS: Irene Freudenschuss-Reichl thanked participants for their participation and encouragement. On the future work of the GFSE, she said the topic for the next meeting would be decided after CSD-9, and requested suggestions and feedback. One possible topic was the issue of technology transfer and the roles of FDI and ODA. She also suggested establishing a formal Advisory Board for the process and invited participants to submit nominations. She thanked partners and funders, including the Swedish and Norwegian governments, the LEAD Foundation and the Austrian Development Corporation, for sponsoring the meeting and enabling a high level of participation from developing countries. Finally, she thanked IIASA for hosting the meeting and the people who had provided suggestions for speakers.

In response to a request for clarification on the nature and mandate of the GFSE, Thomas Johansson said it provides a neutral forum for promoting stakeholder dialogue and informing the intergovernmental process, and its recommendations need translation into country-level plans. Irene Freudenschuss-Reichl added that some participants had suggested applying the GFSE model to a regional setting and that the GFSE was working with other processes to avoid duplication. Thomas Johansson thanked Irene Freudenschuss-Reichl for her work in convening this meeting, which closed shortly after 2:00 pm.

THINGS TO LOOK FOR

EECO 2000 - ENVIRONMENT AND ENERGY CONFERENCE: BUSINESS STRATEGIES FOR SUSTAINABLE ECONOMIC GROWTH: This conference will be held from 29-30 January 2001 in Toronto, Canada. For more information contact: Globe Foundation of Canada, Vancouver, BC: tel: +1-800-274-6097 (in Canada or the US); fax: +1-604-666-8123; Internet: http://www.eeco2000.com

SIXTH INTERNATIONAL CONFERENCE ON SOLAR ENERGY AND APPLIED PHOTOCHEMISTRY: This meeting will be held from 3-8 April 2001 in Cairo, Egypt. Lectures and workshops will help scientists to communicate and share experiences on solar energy issues. For more information contact: Sabry Abdel-Mottaleb, Photoenergy Center, Faculty of Science, Ain Shams University, Abbassia, Cairo, Egypt; tel: + 2012-216-9584 (mobile); fax: +202-244-7683; e-mail: solar@photoenergy.org; Internet: http://www.photoenergy.org/solar2001.html

12TH GLOBAL WARMING INTERNATIONAL CONFERENCE & EXPO - KYOTO COMPLIANCE REVIEW: This meeting will be held in Cambridge, UK, from 8-11 April 2001. For more information, contact: Sinyan Shen, The Global Warming International Center Headquarters, Naperville, Illinois, USA; tel: +1-630-910-1551; fax: +1-630-910-1561; Internet: http://www2.msstate.edu/~krreddy/glowar/gw12c.html

CSD-9: The Ninth Session of the Commission on Sustainable Development will be held in New York from 16-27 April 2001. This session will focus on: atmosphere; energy/transport; information for decision making and participation; and international cooperation for an enabling environment. The topic of the multi-stakeholder dialogue segment will be energy and transport. Prior to CSD-9, intersessional meetings will be held from 26 February - 2 March (Energy Expert Group), 6-9 March (Working Group on transport and atmosphere) and 12-16 March (Working Group on information for decision-making and participation and on international cooperation for an enabling environment). For more information contact: Zehra Aydin-Sipos, Major Groups Focal Point, Division for Sustainable Development; tel: +1-212-963-8811; fax: +1-212-963-1267; e-mail: aydin@un.org; Internet: http://www.un.org/esa/sustdev/csd9/csd9_2001.htm#

CSD-10 (PREPCOM): The Tenth Session of the Commission on Sustainable Development is expected to convene for a meeting in New York from 30 April - 2 May 2001 to serve as the Preparatory Committee for the Ten-year Review of UNCED. For more information contact: Zehra Aydin-Sipos, Major Groups Focal Point, Division for Sustainable Development; tel: +1-212-963-8811; fax: +1-212-963-1267; e-mail: aydin@un.org

THIRD UN CONFERENCE ON THE LEAST DEVELOPED COUNTRIES: This meeting will be held from 14-20 May 2001 in Brussels, Belgium. An Intergovernmental PrepCom for the event will be held from 5-9 February 2001 in Geneva. For more information contact: Office of the Special Coordinator for Least Developed, Landlocked and Island Developing Countries, UNCTAD, Geneva, Switzerland; tel: +41-22-907-5893; fax: +41-22-907-0046; Internet: http://www.unctad.org/en/subsites/ldcs/document.htm

UNFCCC SB-14/RESUMED COP-6: The 14th Session of the Subsidiary Bodies of the UN Framework Convention on Climate Change will take place from 21 May - 1 June 2001 in Bonn, Germany. This meeting may also serve as the resumed COP-6 (as outlined under COP-6 decision FCCC/CP/2000/L.3). For more information, contact: the UNFCCC Secretariat; tel: +49-228-815-1000; fax: +49-228-815-1999; e-mail: secretariat@unfccc.int; Internet: http://www.unfccc.int

UNFCCC COP-7: This meeting is scheduled to take place from 29 October - 9 November 2001, in Marrakech, Morocco. For more information, contact: the UNFCCC Secretariat; tel: +49-228-815-1000; fax: +49-228-815-1999; e-mail: secretariat@unfccc.int; Internet: http://www.unfccc.int

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Letter dated 17 January 2001 from the Permanent Representative of Canada to the United Nations addressed to the Secretary-General

I have the honour to transmit to you the report of the International Expert Meeting on Information for Decision-making and Participation, which was held in Aylmer, Canada, from 25 to 28 September 2000 (see annex).

I should be grateful if you would have this letter and its annex circulated as a document of the Commission on Sustainable Development at its ninth session.

(*Signed*) Paul **Heinbecker**
Ambassador
Permanent Representative

01-23120 (E) 130201

Annex to the letter dated 17 January 2001 from the Permanent Representative of Canada to the United Nations addressed to the Secretary-General

Report of the International Expert Meeting on Information for Decision-making and Participation

Aylmer, Quebec
25-28 September 2000

Sponsored by:

The Government of Canada

and

The United Nations Department of Economic and Social Affairs
The United Nations Environment Programme (UNEP)

GRANDMOTHER
had a food dish made from birch bark.
Her philosophy was that the bark dish represented the abundance of Mother Earth in sustaining life. Grandmother said that she offered her food dish to whoever wished to eat. When she became too old to prepare her food, we would take our turn to put food in to her plate. Grandmother lived a long and healthy life, over one hundred years. Now I must take care of Grandmother's dish because it is my dish.
Now I am GRANDFATHER.

Stephen Augustine, Mi'Kmag Hereditary Chief
CSD International Expert Meeting on
Information for Decision-Making,
Aylmer PQ September 26, 2000

I. INTRODUCTION

1. The International Expert Meeting on Information for Decision-making and Participation, was convened in Aylmer, Quebec under the sponsorship of the Government of Canada, with the contribution and support of Environment Canada, Agriculture and Agri-Food Canada, the Canadian International Development Agency, the Department of Foreign Affairs and International Trade, Health Canada, Industry Canada, and Natural Resources Canada. The United Nations through its Department of Economic and Social Affairs (DESA) and UNEP were co-sponsors of the meeting. The Agenda of the meeting, its themes, working groups and speakers are attached as Annex 2.

2. The meeting was chaired by Ms. Elizabeth Dowdeswell, former Under-Secretary-General and Executive Director of the United Nations Environment Programme. The meeting was opened with a statement by Dr. Robert Slater, Senior Assistant Deputy Minister, Environment Canada on behalf of the Government of Canada. The Chairman of the Bureau of the CSD, Mr. Bedrich Moldan, participated and addressed the meeting. Welcoming statements were made by Mr. Arthur Dahl on behalf of UNEP and Mr. Lowell Flanders on behalf of the Department of Economic and Social Affairs. In all, the meeting attracted the participation of senior level experts from a representative group of 29 developed and developing countries from all regions of the world. In addition, five non-governmental organizations were represented as well as several private sector companies. Nine experts from a variety of academic and research institutions were invited to participate in their individual capacities. Seven UN system agencies were represented as well as one member of the CSD Bureau. The full list of participants is attached as an Annex 3 to this report.

3. On Monday, 25 September 2000, Mr. Flanders conducted informal consultations with countries involved in the testing of the CSD indicators of sustainable development. Other participants who were available also took part in the consultation. Mr. Flanders briefed participants and testing country representatives on the actions taken by the secretariat since the meeting in Barbados in December 1999 to further revise, refine and update the framework, methodologies and list of indicators. At the opening session on Tuesday, Mr. Flanders made a power point presentation on the evolution of the CSD Work Programme on Indicators of Sustainable Development. The issue of indicators came up at several different points during the course of the meeting.

4. The meeting was conducted through plenary and working group sessions. The meeting had three main themes each of which was addressed through three working groups. Each theme was opened by a keynote presentation while each working group was opened by a short introductory presentation or "conversation starter" to get the working group underway. Brief summaries of each presentation are contained in Annex 1.

II. BACKGROUND TO THE MEETING

5. The CSD Programme of Work for the ninth session of the CSD in 2001 included information for decision-making and participation (Chapter 40 of Agenda 21) as a key cross-sectoral theme for review and action. Thorough consideration of the issues raised by Chapter 40 is not only important in the context of the CSD's Ninth session, but also in relation to preparations for the 2002 review of Agenda 21, since this may be the only opportunity to give particular attention to this Chapter prior to the review itself. The international expert meeting on information for decision-making and participation was organized to consider some of the key issues raised by Chapter 40 and to provide considered advice and recommendations to the CSD on the kinds of policies that could be adopted by governments to further its implementation.

6. Chapter 40 of Agenda 21 specifically calls for implementation of two programme areas: (a) bridging the data gap and (b) improving the availability of information. It has been evident in recent years that access to information is essential in the planning, design and monitoring of policies to support sustainable development at the regional, national and international levels. At the Government level, a growing number of countries are carrying out national data inventories, organizing the collection and dissemination of data, and developing information systems.

7. Great differences also exist between geographical regions and countries at different stages of development, as to the availability of relevant primary data in the area of sustainable development. The quality, comparability and frequency of data compilation and the subsequent quality of information systems are critical issues. The integration and use of the available information in decision-making processes, at all levels, in a timely and appropriate fashion and the accessibility of the public to such information are issues of great concern. The International Expert Meeting sought to identify common approaches to the analysis of access to and use of information while focusing specifically on the two programme areas requiring implementation as part of Chapter 40 of Agenda 21.

III. SUMMARY OF INTRODUCTORY STATEMENTS

8. Mrs. Elizabeth Dowdeswell, as Chairperson, opened the meeting and welcomed participants on behalf of the organizers of the meeting - the UN Department of Economic and Social Affairs and the UN Environment Program - and the hosts - Environment Canada.

9. She noted that eight years ago in Rio, governments articulated their commitment to bridging the gap between industrialized and developing countries in the availability, quality, coherence, standardization and accessibility of data. Chapter 40 of Agenda 21 recognized that "Knowledge Is Power;" that information is fundamental to development; and that there is a "Digital Divide" - a growing gap between rich and poor as high technology becomes such an important part of the global economy.

10. She said that the background paper prepared for the meeting underscored just how much more important this issue has become in the years since UNCED. The "new economy" has arrived. (E-commerce is growing by 100% a year; India's software exports are expected to grow from $4 B at present to about $100B by 2005).

11. The nature of wealth generation has changed as focus has shifted to the new knowledge economy. With it has come the potential for enhancing the concept of global solidarity (as information technologies decrease time and space) - or - if only an elite continue to have access - a potential for deeper division and inequality.

12. For those who believe that democracy and good governance are the keys to development, information technologies enable transparency. Widespread access to and use of knowledge by all participants in society - policy makers, the private sector, NGOs, academics, students, the media and civil society can lead to participatory democracy. Information technologies, she stressed, not only shape our worldview, but also give us greater power as individuals and citizens to change the world.

13. It is in the exchange of knowledge and experience that many solutions to development problems can be found. She pointed to the experience gained from Egypt's cyber-cafes for the poor, to Jamaica's rural cyber-centres, to Cameroon's use of information to get a good price for agricultural products, and to Malaysia's experience with mobile Internet units, as well as Estonia's policy of internet access being a human right. She mentioned the generosity of the private sector in making hardware available to provide medical information and assist in emergency relief.

14. While access to hardware and software is important; in many ways, that's the easy part. But even more important is developing the human capacity to make judgments about information, to integrate information so that it can support holistic sustainable development initiatives and to transform information into knowledge.

15. Mrs. Dowdeswell focused the attention of the experts on 2 main challenges: one, to create a more level playing field for decision-makers around the globe, and second to understand the full potential of new technologies.

16. She called on the participants to harness their expertise to:

- provide advice and recommendations to the forthcoming meeting of CSD - CSD9 - on the kinds of policies that should be adopted by governments to further implementation of Chapter 40, and

- provide substantive inputs for the report of the Secretary General -for CSD9 and ultimately in preparation for Rio + 10.

17. In closing, she said that participants have a significant opportunity to make a strong contribution - both conceptually and pragmatically - to the next steps in bringing about global sustainability.

18. Dr. Robert Slater, Senior Assistant Deputy Minister, Environment Canada, welcomed participants on behalf of the Government of Canada and Environment Canada. He quoted Arthur Campeau (former Canadian Ambassador for the Environment) to the effect that the challenge is whether we as humans are smart enough to take avoidance action before catastrophe takes place, whether we have evolved beyond our 'reptilian brains.' Humans need to make a lighter footprint on the earth and through information we can give a voice to the environment, which cannot speak for itself. Compared to the general economy, the environment is like a "tinkling bell," a barely audible voice. While the Canadian economy had passed the trillion-dollar mark, there is no measure of environmental value. He noted however that Canada's last budget provided for a more a deliberate and systematic look at sustainable development, particularly in terms of developing indicators of sustainable development (SD) indicators. Two initiatives will address this: a new national task force to

be announced in the following week to lead the design of an integrated knowledge management system for environmental information. The National Round Table on the Environment and the Economy (an independent but government-funded group) will lead a complementary initiative to develop, pretest and promote indicators of sustainable development. There is a need for macro-level indicators to describe environmental conditions and the status of sustainable development. Sustainable development indicators need to be effective, and need vigorous discussion. There is a need for macro-level indicators to describe environmental conditions and the status of sustainable development. This effort will require patience; it took 50 years to establish a dependable set of economic indicators. A variety of organizations have been doing good work on development of indicators and other methods of measurement. He noted in particular the work of the World Bank using the notion of natural capital. He noted that an expert meeting such as the one being convened is a learning experience - an opportunity to learn by mistakes and learn from the best practices of others. He wished the participants success as they brought the light of their experience to bear on the issue of information for decision-making and participation.

19. Mr. Arthur Dahl, representing the United Nations Environment Programme (UNEP) welcomed the participants and highlighted the importance UNEP placed on adequate global environmental observing, assessment and reporting. UNEP's own contributions included its Global Environment Outlook (GEO) reports, its coordination of the UN system-wide Earthwatch, its participation in the Integrated Global Observing Strategy (IGOS) Partnership and the Global Observing Systems, and its joint role with DESA as Task Manager for Chapter 40 of Agenda 21. UNEP's Division of Environmental Information, Assessment and Early Warning is presently designing a new global environmental information system, in collaboration with UN agencies, the private sector and NGOs, which will make it possible to integrate multiple layers of information from many sources for decision support and public information.

20. Mr. Dahl also summarized the results of the recent Global Conference on Facilitating Access to Environmental Information (Dublin, 11-15 September 2000). The Conference called on countries to enhance networking and coordination, primarily through consortia of key environmental information suppliers using web-based technologies, for an integrated information service in each country. It also called on governments to support UNEP in the development of a global environmental portal on the Internet, and to consider acceding to the Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters, or developing similar regional conventions.

21. Mr. Flanders on behalf of the Department of Economic and Social Affairs welcomed all of the participants and extended thanks to the Chairperson, Ms. Dowdeswell for kindly agreeing to manage the deliberations. He also thanked the many agencies of the Canadian Government for supporting the meeting. This included most particularly Environment Canada for hosting and organizing the meeting. Working with Environment Canada, were Agriculture and Agri-Food Canada, the Canadian International Development Agency (CIDA), the Department of Foreign Affairs and International Trade, Health Canada, Industry Canada and Natural Resources Canada. All of these organizations put in an enormous amount of work to make it possible for the meeting to be a success.

22. Mr. Flanders reviewed for participants how the meeting would be conducted. He noted that the main challenge of information for decision-making and participation is not lack of information, but its excess. The real task is to organize information so that we can make the best use of it. Everyone who has accessed the World Wide Web knows the wealth of information that exists and the challenge of finding the information you need quickly and efficiently. For policy makers, putting information in digestible packets that can make a difference in how decisions are made is critical. In the United Nations a number of important recent meetings have devoted considerable attention to information and technology needs, including a high level segment of the Economic and Social Council and the recent Millennium Assembly. Although some have emphasized the so-called "digital divide," he expressed hope that the meeting could focus on the ways in which information and information technologies can unite rather than divide us. Because if the information revolution has any meaning, it is in the ways that access to information can bring people closer together as a global community. While globalization may have its downside, the upside is that through greater sharing of information and knowledge, we can better appreciate our bond as human beings since we all share with our planet a common fate.

IV. MAIN CONCLUSIONS AND RECOMMENDATIONS

A. Access To and Uses of Information

Public Access and Participation

23. Reliable access to information is essential for knowledge-based decision-making. Access to sustainable development sources of data and information at the right time and at the right cost is critical. Free, open and unrestricted access, as appropriate, to sustainable development information is indispensable.

24. The management of data, information and knowledge is crucial to sustainable development. Keeping in mind issues of equity, inclusiveness, transparency, predictability, and efficiency, the meeting stressed the need for governments to:

(a) Develop a multi-media, and as appropriate, multi-lingual, communication strategy to promote wider public access. The strategy should encompass all types of communication tools, from traditional and non-formal, to advanced, modern technologies and operate at all levels from local to global.

(b) Consult with major groups and other stakeholders about information technology development and applications with a view to establishing systems and mechanisms that involve all segments within society in all stages of the information technology process.

(c)Encourage and support the development of appropriate institutional and regulatory frameworks for data gathering, sharing, diffusion and use of information, by reviewing existing rules, modalities and protocols with the aim of making information more accessible to all citizens.

(d) Encourage sustainable development by implementing appropriate capacity building and developing appropriate infrastructure to support full participation in the rapidly expanding information-based knowledge economy.

(e) Facilitate public access to sources of relevant sustainable development data and information. Disclosure principles and policies should be negotiated in an open multi-stakeholder process at national, regional and international levels.

(f) Publish clear and concise information about sustainable development that can be easily captured and understood by the public. This information should be linked over the web to more complex data so that it allows different audiences to access different levels of complexity.

(g) Urge the CSD to recommend the development and establishment of a minimum set or common "benchmarks" for disclosure policies and/or practices by public agencies including governments, guarantee and financing agencies, regional and global public institutions or processes, and regional or global financial institutions.

25. An increasing amount of information relevant to sustainable development is being generated by the private sector. The outsourcing, privatization or commercialization of information that has traditionally been in the public domain may limit the availability and access to information by people in both developed and developing countries. The meeting:

(a) Recommends that the public's access to information be maintained by discouraging and/or regulating, as appropriate, the migration of public or publicly held information into limited access commercial information systems.

(b) Calls on the CSD to initiate, in collaboration with global business and other stakeholder consortia, a review of the rules, modalities and protocols for access to relevant sustainable development information. Issues to be addressed in the review could include, *inter alia*, confidentiality, privacy and the scope of information for the "public good".[1]

[1] Considerations in defining the domain of public information, include the need for consistent organization of the information needed to assess significant social, environmental and development trends and impacts related to investment decisions; existing information tools and existing global commitments by governments (e.g. the Climate Convention), etc

Information Integration and Coordination

26. The lack of a clear political mandate to more fully integrate national sources of data and indicators for sustainable development, and to provide public access to information was seen as a major political challenge. The meeting:

(a) Calls upon Governments to make a high level commitment to the need to establish national integrated information systems for decision making for sustainable development.

(b) Emphasizes the importance of public participation in improving the quality of data and in sustaining the political will needed to support a strong information infrastructure.

(c) Recommends the development of a directory of meta-data repositories at various administrative levels containing easily available data compiled in ways that are usable by policymakers.

27. The lack of full and effective cooperation between departments and institutions both at the national and international levels responsible for data collection and indicators, often leads to inefficient information management due to duplication of surveys, inconsistent methodologies and inefficient use of information. The need to more clearly identify the national units or agencies responsible for coordinating and/or compiling data was highlighted. The meeting:

(a) Calls on member states to endorse development of the CSD secretariat website into a network portal responsible for linking the different international institutions that are responsible for sustainable development data and indicator sources.

(b) Recommends that the role of the private sector, NGOs and other major groups in data analysis and reporting be taken more fully into account in national information systems.

(c) Encourages countries that have experience with sustainable development information systems and indicators to twin[2] with other countries and provide knowledge and assistance for capacity building, especially between developed and developing countries.

28. Problems of definition, differences in reporting periods, statistical and measurement methods (for example, scope and scale) were identified as technical constraints facing many countries. The meeting.

(a) Encourages Governments and international organizations to work together, at the national and international level, to address technical differences in methods, reporting periods, data collection and aggregation, and in this regard, stresses the importance of using common methodologies for data and indicators of sustainable development (e.g. the UNCSD indicator methodology sheets).

[2]Testing countries noted that twinning has proved particularly beneficial in the context of the CSD Work Programme on Indicators of Sustainable Development.

(b) Encourages the greater use of spatial information systems to combine and integrate economic, social and environmental information. Use of data at different geographical scales would be improved by geo-coding of such data.

CSD Work Programme on Indicators of Sustainable Development

29. The meeting:

(a) Expresses appreciation for the progress achieved and the contribution made by testing countries in finalizing a core set of indicators of sustainable development organized by themes and sub-themes under the CSD Programme on Indicators of Sustainable Development.

(b) Recommends that the Commission on Sustainable Development endorse the core set of indicators thus developed as a valuable starting point for countries that may wish to organize and elaborate their own national programmes for the testing, development and use of national level indicators of sustainable development.[3]

(c) Urges the Commission to continue its Work Programme on indicators of sustainable development, giving particular attention in the next phase to assisting developing countries, and countries with economies in transition, that may want to develop a national indicators programme with technical information, advice and capacity building support and to advance further work on modalities for the linkage and aggregation of indicators, building on and cooperating with existing research and development efforts

(c) Strongly recommends that all stakeholders be closely involved in the development and use of indicators of sustainable development.

(d) Urges all countries to make better use of indicators, indices and other statistical measures appropriate to specific national conditions and priorities, to more closely monitor and report on progress being made at the national, regional and local levels towards defining and achieving national goals for sustainable development.

Uses of Traditional Information

"Who speaks for the Earth? Trees and animals don't speak in human language. Those few humans in communities that still realize they are part of Nature, sometimes speak not just for themselves but for that whole Nature of which we all are a part".

Thomas Banyacya, Hopi Elder
December 1992

30. The meeting stressed the importance of diversity as a fundamental prerequisite of all life Similarly, a diversity of worldviews supports human adaptability and resilience. Since

[3] The Expert from Australia reserved his position on this point.

traditional knowledge is linked to people who have direct access to and experience with nature's resources, decision-makers need to recognize and respect the existence of multiple knowledge systems and incorporate to the extent possible, the wealth of information they contain.

31. Intrinsic knowledge, connected to people and place, is part of the human heritage and has economic, social and environmental value. International and national level negotiations should ensure that indigenous peoples are able to benefit from the value of their own knowledge. Such negotiations should aim to protect the intellectual rights of indigenous peoples to such knowledge.

32. Modern decision-making structures need to encompass and make use of the multiple views, approaches and value systems (e.g. traditional, scientific, spiritual, gender etc.) of the diverse communities affected by public and private decision-making. The meeting recommends that:

(a) Indigenous and local communities, receive, as appropriate, government support and funding to manage their traditional knowledge and resources more effectively. Research at the community level should be facilitated to allow these communities to document their findings in their own languages and to follow ethical guidelines of their own making. Such findings should be incorporated as an input to local and national aggregation efforts through the establishment of fora and networks for the exchange of this information.

(b) Institutional and legal structures for the application of traditional knowledge to sustainable resource and community management be established or be strengthened where they exist.

(c) Ecological indicators that incorporate local and traditional sources of information such as species number, migration patterns, changes in weather and vegetation, should be utilized to better understand the complexity of the ecosystem.

B. Data Gaps and Information Systems

Harmonization and Rationalization of Data and Indicators

33. There are significant efficiencies to be gained through improved harmonization in data collection at the international, national and local levels and the meeting:

(a) Calls on international organizations to streamline international data collection by building on existing efforts in harmonization of indicators, methodologies and data standards and recognizes the important role the UN Statistical Commission and the ACC Subcommittee on Statistical Activities," can play in this regard.

(b) Recommends that international organizations and convention secretariats be clear about the purpose of data requests and standardize and harmonize their requests for data to the extent possible.

(c) Urges national governments to use standard methodologies and data attributes to manage national data collection systems in conformity with international standards where appropriate.

(d) Recommends that governments adopt quality assurance processes to ensure data is valid, reliable and traceable.

Weaknesses in Data Collection and Core Data Sets

34. There is a need to develop tools to transform collected and analyzed data and indicators into usable information for relevant stakeholders and decision-makers. To do so, the meeting:

(a) Recommends that the UN develop a common framework for identifying those core data sets and information that are critical for the implementation of sustainable development and related multi-lateral agreements.

(b) Calls upon national governments, the UN system and international organizations, particularly those organizations dealing with environment and sustainability issues to mainstream sustainable development data and information procedures and services, by institutionalizing and strengthening integrated geo-spatial information systems for collecting, analyzing and value-added processing of information for policymakers and other user-groups.

(c) Recommends that national governments establish a system for relevant data-collection and information processing for promoting Agenda 21 at national and local levels taking into account the needs of different stakeholders and decision-makers for information and knowledge about environmental, socioeconomic and cultural issues.

(d) Urges national governments to develop standard protocols for non-governmental organizations, for use in their community "watch" projects, and to provide common forms or "architectures" for reporting their data.

(e) Recommends that national governments develop strategic partnerships with non-governmental organizations (and the private sector) to stimulate innovative data generation and collection methods.

C. New Information Technologies

Remote Sensing and Space Technologies

35. Space science technologies for satellite Earth observation, satellite-based positioning and navigation, and satellite communications are advancing rapidly and new applications continue to emerge and play an increasingly important role in sustainable development. The applications of remotely sensed data for sustainable development are extremely diverse and have potential applications in nearly every sector of the society from the medical profession to business to policy making for sustainable development. The meeting, therefore:

(a) Encourages satellite operators, relevant international organizations and agencies to (i) provide cost effective access to space technology inputs for sustainable development, (ii) help with capacity building in developing countries to interpret, analyze and integrate satellite based information into operational applications.

(b) Recommends that the United Nations encourage the networking of decentralized data repositories applicable to distance education, telemedicine, natural resource accounting and weather and climate forecasting, agricultural development, environmental and natural resource management, poverty alleviation and sustainable development planning, to name a few.

(c) Recommends that the United Nations promote government, non-government and private sector coalitions to facilitate the sharing of space science research and technologies between developed and developing countries.

(d) Recommends that continued work and research be done on developing models based on user-friendly formats and styles that allow decision-makers to make informed decisions in policy development, for example in disaster mitigation and management.

Internet-based Information Systems

36. The rapid changes in technologies provide both opportunities and challenges for the dissemination of sustainable development information. Internet-based information systems possess great potential for wider connectivity and accessibility to the public at large. The meeting:

(a) Calls upon governments, international organizations, non-governmental organizations and the business community to establish a strategic partnership for the formulation and implementation of forward-looking strategies for the development and networking of Internet-based Information Systems. The UN and related international organizations are urged to provide advice, technical and other forms of assistance in such an undertaking.

(b) Urges member governments and international organizations to identify areas of priority and provide adequate support to the development of innovative prototypes of

web-based information systems with the possibility of them being further developed and scaled into operational systems.

(c) Recommends that Governments and international organizations support initiatives to introduce, develop and implement multi-lingual and multi-dialect capabilities in internet-based systems, so as to ensure the widest dissemination of information, in particular, to those groups currently excluded.

(d) Recommends that a step-by-step approach be taken to the implementation of a web-based information system. A combination of on-line and off-line strategies should be promoted, to encompass those people who currently do not have access to the Internet.

D. Partnerships for Financing and Mutual Support for Sustainable Development Information

37. Concerns were raised about the difficulties in mobilizing financial resources for the development of information systems for sustainable development. The meeting discussed both the political and economic obstacles to mobilizing financial resources for information related to sustainable development. The meeting:

(a) Recommends the formation of strategic partnerships between Government agencies, civil society groups, multilateral organizations and the private sector to mobilize political and financial support for national information infrastructures within which sustainable development information systems can be developed and improved through wide participation.

(b) Encourages bilateral and multilateral donors to ensure that development assistance includes building information capacity for sustainable development at a national level.

(c) Recommends the identification of innovative approaches, including making more efficient use of existing infrastructure, to provide local solutions for mobilizing financial resources and effective implementation of information objectives for sustainable development.

(d) Recommends that governments and other stakeholders take fully into account and promote understanding of the strategic benefits of well-functioning information systems for sustainable development, including benefits to the economy as a whole.

(e) Calls upon countries to prioritize essential sustainable development information needs that have high possibility of success to focus scarce financing towards pilot information products that demonstrate the effectiveness and the economic impact of sustainable development information to policy makers.

(f) Encourages the sharing of experiences gained on the national and international level in elaboration of best practices for disclosure of information and the free and unrestricted exchange of environmental data and information-related products.

(g) Invites governments, business and multi lateral organizations to strengthen existing centers of excellence through reinforcing their institutional and technical capability as network information nodes that combine electronic and traditional knowledge of information handling.

(h) Recommends that developing countries have free, open and unrestricted access, where appropriate, to data and information essential to sustainable development, originating in their own territory but held in developed countries.

E. Looking Forward

38. Chapter 40 lays the foundation for transition to the new knowledge based economy of the 21st century. The new knowledge economy has the potential to enhance our individual skills, facilitate greater resource efficiency and promote technological advances to help reduce the gap between developed and developing countries and between rich and poor. The new knowledge economy presents us with both an opportunity and a challenge. We can take advantage of this opportunity only if we increase our investment in human beings, recognize the value of diverse views, and appreciate the power of stakeholder participation. We can meet the challenge by building information infrastructures, adopting conducive policy and regulatory frameworks, fostering an open business climate with improved services and financing, and generally supporting measures to ensure that people everywhere can benefit from the information revolution. Greater access to information and wider public participation in the use of information can be a force that unites rather than divides us.

ANNEX 1

Summary Presentations - Themes and Working Groups

Theme 1: Access to and Uses of Information

Keynote: Mr. Taholo Kami (Fiji)

The SIDSnet Experience

The Small Islands Developing States Network was initiated in 1997 as www.SIDSnet.org. This ambitious attempt to mobilize experts in sustainable development issues in 42 island nations through an Internet based network provides some valuable lessons in the use of information technology as a means for sharing experiences and building global consensus amongst a geographic and culturally diverse group of stakeholders.

The Island experience of isolated and small markets has similarities within all nations. Small remote rural villages and the urban poor are segments of the population that do not attract private investment into needed communications infrastructure. Basic services are often provided at high cost and local capacity is lower then other parts of the community. This is an issue with islands common to even the most developed nations. SIDSnet stakeholders included stakeholders in issues such as climate change, Energy, Coastal and marine resources, Sustainable Tourism, Trade and other issues mandated by the Barbados Programme of action.

Relevant Lessons

Obstacle 1: Internet Access and penetration

Cost is the single biggest obstacle to Internet access in developing countries. Costs range from US$1200 for a basic computer to hourly charges of $1 – 8.00 per hour for a dial up connection. Internet penetration in most developing countries is less then 2% of the population and limited to key urban centers.

Obstacle 2: Local Capacity

The lack of awareness and limited understanding of the benefits of the Internet are detrimental to the development of appropriate information applications and an obstacle to investment in infrastructure. The low computer literacy at all levels of society and the lack of specialized Internet developers and IT technicians/programmers also hinders adoption of the Internet.

Opportunities

1. Examine New Approaches to OLD problems

The opportunity of instant dialogue via email or the Internet provides new solutions to old problems with data collection and processing, access to information and new approaches. The sharing of experiences through a network and the ability to broadcast and compare results across distances are now possible through various new applications such as the UNEP GRID – City State of Environment web based software. Twinning between countries can take advantage of new technology and best practices.

2. Recognize existing information processes

Understanding existing networks can result in a strategically placed Internet connection benefiting large off line communities. A methodical approach to capturing information from current organizational activities is also essential. An example of this is with meetings and seminars held around key development issues. So much information is prepared for meetings it would benefit all parties if a standard approach could be adopted by development and donor organizations to ensure that agendas, participants lists, presentations and reports would be published online within 48 hours from completion of meeting.

3. Speak the Language of Policy Makers

It is recognized that mainstreaming Sustainable Development as part of development policy is necessary. Sustainable Development must tie the benefits of environmental preservation as part of development of Tourism and Trade and other social issues.

The Internet also provides an invaluable tool to inform and enlist the general public to put appropriate pressure on legislators.

The Ground Rules:

1. It's all about People....

   - Sell Value - benefits
   - Connect to objectives

2. Relevance Not Reverence
   - Keep technology in perspective
   - Vehicle for achieving our objectives

3. Innovate..... Break the Rules

Working Group 1: Public Access to Information

Presenter: Ms. Elena Petkova (WRI) – The Aarhus Convention on Access to Information

On June 25, 1998, at the Fourth "Environment for Europe" Ministerial Conference in Aarhus, Denmark, 35 countries and the European Union signed the new UNECE[1] Convention on Access to Information, Public Participation in Decision-Making, and Access to Justice in Environmental Matters (generally known as the Aarhus Convention). The Aarhus Convention provides a framework for environmental governance with its three "pillars": access to environmental information, participation in policies and decisions affecting environment, and provisions for access to judicial redress in case of public agencies failure to implement the first two pillars.

The first pillar: access to information answers 3 major questions:

- What type of information should be made accessible by public authorities? The Convention identifies the following broad categories of information that should be in the disclosed to the public: information about the state of environment, about factors and activities that influence it (e.g. policies, projects) and environmental impacts on human health.
- How should it be made accessible? The convention provides for the use of multi-media channels and procedures for the disclosure of information. It also addresses the question of costs, which should not be prohibitive;
- Who has access? The issues of standing are often controversial. The Conventions approach is that individuals and organizations with interest in the environment should have access to information irrespective of nationality…

The Convention's pillars set common governance standards and create a comparable operating environment for investment in the countries of the UNECE region. These standards are designed to improve accountability, efficiency and effectiveness of environmental management.

Presenter: Mr. Christian Brodhag (France) – Linguistic Obstacles to Information Access

Multilingualism is often perceived at the international level as a handicap that hinders global governance and leads to additional costs for documents translation and simultaneous interpretation during international conferences. The intention of this discussion is to explain the necessity of diversity in language and cultural approaches and to propose some solutions.

Cultural and language diversity are part of sustainable development since they are a basic resource for development. In fact scarcity and resource management have produced very different and original solutions in various societies. The market approach is not the unique solution for scarcity management. Specific production and consumption patterns and social practices adapted to local conditions also can promote high efficiency in resource management. In water management, there are strong differences between temperate and dry countries. Water harvesting technologies and practices, for example, have common grounds in all dry regions. Specific concepts and words that don't exist in northern languages have consequently come into use. South-south transfers in this field imply adequate concept definitions and correct translations.

Concerning the domain of land use, relationships between territory and society appear to be very different in different countries. In the United States economy, for example, land appears to be a simple production factor or a strictly protected natural heritage. In France the relationship is

more complex in the concept of "*terroir*" where cultural, historical and ecological characteristics of local foodstuffs production are close to specific alimentary practices, and the basis of a specific market. For indigenous people and their communities relations with territory also have spiritual and religious connotations. Sustainable land use management implies adequate use of those different approaches. The French term "terroir" has, for example, no equivalent in English.

This issue has some more trivial aspects at all levels: global, national and local. In this respect, the whole set of languages (working and official UN languages, written language, dialect and oral) should be coherent and interlinked. The efficiency of international negotiations on sustainable development, requires an adequate understanding of the concepts, approaches, mechanisms and tools by all stakeholders and must therefore be specifically addressed in the context of multilingualism, with the full use of all UN official languages.

In a top-down view, implementation of sustainable development implies that global issues are correctly passed on to national and local stakeholders, through a coherent information system: using the Internet with specialized, regional portals giving access to local and individuals sites, but also precise definition of terms used through a thesaurus/glossary allowing accurate translations in all languages, both written and oral.

In a bottom up approach, some specialized or local terms and concepts can have a « universal use ». By specialization we understand geographic (bio-regional), linguistic, and disciplinary... To deal with this problem there are solutions: cooperative networks at a global level on specific issues, south south transfer through networking and capacity building, identification and definition of new scientific or technical approaches (ex: ecological rucksack, factor 4).

These problems find some erratic and partial responses. The CSD-9 session on information for decision-making and participation could be the opportunity to launch a more coherent approach with tasks coordinated at the global level, such as:

- A thesaurus/glossary program with definition of terms used in the UN languages context
- A global architecture of Internet with the full use of meta-information and common protocols
- Terminology work in all languages to facilitate understanding of sustainable development issues and to enhance the global value of local solutions.

Working Group 2: Traditional Knowledge and Information

Presenter: Mr. Stephan Augustine (Canada) – Uses of Traditional Knowledge

Chief Augustine in his opening remarks noted that the idea of "incorporating" traditional knowledge into scientific information, for the sole purpose of scientific use (with science being presented as having the ultimate validity) is an offensive approach to other sources of knowledge. It is a "take and leave" approach to whatever is useful, at the time, to scientists, a fragmentation of knowledge for integration purpose. It would be far more appropriate to have a "blending" approach, in which both science and traditional knowledge would be recognized for their own integrity, in the best interest of the public at large. We have to take into account that

the public good is not necessarily synonymous with scientific knowledge and aims, especially in an age where science is more and more at the service of industry (as evidenced by genetically modified foods, nuclear waste, major environmental damages caused by mega-hydro projects, bovine growth hormone, to cite but a few). These are certainly not in people's best interest or environment friendly.

When it comes to access to information, one has to consider what kind of information we speak about. It is also directly linked to levels of education and freedom of information for all in society, not only in developing countries, but as well in so called industrialized countries. In the push for globalization, there is a danger for developing countries to be co-opted to fully embrace western industrialized technologies, knowledge and world views, at the detriment of their own culture and community-based knowledge. On the other hand, there is also the risk of traditional cultural knowledge to be "kidnapped" by industrial science, leaving the holders of that knowledge without a say in how it will be used, for which purposes, or even possibly without access to their own resources (as medicinal plants for instance). Which brings us to the issue of intellectual property rights. In the face of sweeping corporate globalization, how can developing countries and traditional societies develop and implement mechanisms to protect their culturally based knowledge? It doesn't mean that they will not share the benefits of that knowledge, but that they will retain access to the source of their knowledge (which can potentially be destroyed by modern technologies overriding other ways of knowing) and a say in how it is used.

The intensive globalization efforts of the past decade are intent on a "standardized" approach to the world, which flies in the face of regional diversity, cultural diversity and eventually biodiversity. It is our responsibility to put in place a system of checks to balance the increasing encroachment of one single worldview.

The new communications technologies, while they can be a very useful tool for exchanging information and ideas, can also be used negatively to streamline different ways of thinking and ways of knowing. The use of information technologies must be devolved to the hands of communities, and not a top down approach to knowledge coming of the «nations who know" to the rest of the world. Knowledge has to remain diversified, as cultures, as nature itself. That is the whole purpose of the Convention on Biodiversity.

Working Group 3: Problems of Data Collection in Developed and Developing Countries

Presenter: Dr. Edgar E. Gutiérrez-Espeleta (Costa Rica) – Problems of Data Collection

Data collection and the difficulties in combining data from different national units or agencies and among different international sources has been studied and analyzed by different groups. One of these groups is the Data Working Group (DWG) established within the UNEP Global Environment Outlook (GEO) project two years ago and which is still supporting the UNEP GEO process on these matters.

As an introduction for our discussion under this topic, I would like to communicate some of DWG findings under the topic that interests us for this meeting. We have found that there exist

some institutional constraints that affect the development of a reliable and opportune data system for sustainable development decision-making. Among these are:

- Monitoring and data collection infrastructure of most developing countries is severely handicapped or non-existent
- There are limitations in resources, personnel and equipment
- Keeping well trained personnel in publicly funded institutions is difficult
- Data management infrastructure of many countries is weak and data reporting is fragmented
- Data are reported for different geographical areas by different agencies and organizations. As a result, it may be impossible to use and compare otherwise valuable aggregated datasets in global and regional assessments
- There is no organizational mandate to collect and report time-series data internationally on specific issues on a regular basis
- Many issues are not universally relevant. In such cases, not all countries will collect associated data and global datasets will therefore be incomplete

Institutional constraints are not the only ones. There are also technical constraints that make comparing and aggregating information more difficult, such as:

- Definition differences
- Different reporting periods
- Gap filling by various statistical methods
- Conceptual and technical difficulties of measurement
- Differences in measurement method
- Difficulties of access: copyright, high cost, jealousy, competition

These and other problems related to data management and collection make fulfilling the mandates of Agenda 21 Chapter 40 difficult to accomplish.

Theme 2: Data Gaps and Information Technology

Keynote: Mr. Charles Basset (CIDA, Canada)

Mr. Basset noted that while many are drowning in data and gaining vast amounts of computing power, there's a growing gap – of access to information, and opportunity to use and benefit from knowledge. To varying degrees, it's a gap between rich and poor, young and old, urban and rural, male and female.

The knowledge and information gap is even greater than the income disparity between North and South, which doubled during the Development Decades, and keeps on growing. And now – as the information age replaces the industrial era – knowledge is increasingly the most valuable economic asset, and the key factor in production. So the developing world's need to connect, to plug in, to somehow catch up, becomes more urgent and vital with each passing day.

He offered a few thoughts:

- on what kind of information is really needed;
- on the growing gap between the included and the excluded;
- with a few examples that point to how we can respond.

What kind of information, and how do we make it useful?

The sheer volume of information available is growing exponentially, at an unprecedented and accelerating pace. We're up to our necks in diverse, fragmented, unassimilated information flowing from print, from electronic media, from faster and more powerful computers ... and from the Internet, expanding in big-bang fashion, with no end in sight.

Attempting to extract the information we want from this overwhelming flood has been compared to trying to drink from a fire hose. Fortunately, we don't need to know everything, and what we all want is essentially the same: the right information, at the right time, at the right cost, to make wise decisions.

As mentioned in the background document, many developing countries are organizing data and creating information systems. And technical advances – in, for example, remote sensing, computer power, and Geographic Information Systems – are rapidly improving the amount and quality of data available to support decision-making ... while institutionally, a variety of programs and channels are taking shape.

CIDA is an example of an organization that has struggled with the need to turn data and information into knowledge. It might seem ironic – Canada ranks number 6 (between Denmark and the Netherlands) in an index of countries poised to take advantage of the information revolution ... and there's no shortage of computers at CIDA headquarters.

We've got Internet, and intranet, and we're about to get extranet, and maybe we need a safety net. We gather and generate a great deal of data and information.

But do we have the right information at our fingertips? Coding such data – in ways that meet our many users' different needs – is a long-standing problem, aggravated by the growing volume of information at hand.

The information gap

Mr. Basset noted that the information gap is growing. Canada has its own gaps of class, age, location, perhaps even gender, though that may be correcting itself ... and these must be dealt with through domestic policy. In fact, the recent Speech from the Throne outlined the government's goal of bridging some of its own gaps, for example by giving schools and libraries better access to high-speed Internet services.

But by far the biggest and most destructive gap is the gulf between North and South: 15% of our planet's people, in the rich countries, have 90 % of its computers. Meanwhile, sub-Saharan Africa has barely one one-hundredth of the Internet connections that it would be entitled to, if

they were distributed according to population ... and more than half the world's people have never made a phone call.

Yes, there will need to be major investments in telecom infrastructure, and in human resources, as well as better regulatory frameworks, if poorer countries are to take part. But if they focus on the most appropriate and cost-effective technology – often radio, or cellular connections, rather than costly landlines – the investment can be affordable for some governments. Ideally, they can leapfrog over the costly industrial-era stage that developed countries went through, straight into the 21st-century information age.

To help lay the foundations, CIDA is contributing to a variety of new approaches. Canada is major partners, along with the World Bank, in the Global Knowledge Partnership. It's a mixed association of public, private and voluntary sector representatives working toward a common understanding of how technology can support better global sharing of information and knowledge for development.

Bellanet was used in 1998 while updating CIDA's Gender Equality policy. It enabled Canada to carry out consultations, in three languages, with partners around the developing world, so that 'consultation' meant input and feedback in more than just Canadian voices. This first-hand knowledge from the field greatly enriched the process, and grounded the policy in day-to-day reality.

Conclusion

However, these are only beginnings, and we can't let individual success stories mask the reality that the North-South information gap is huge, growing, and too costly in too many ways to ignore. Yes, it will take investment from all sides – from governments, multilaterals, the private sector, and aid agencies like CIDA – of scarce resources that have many other potential uses.

There will be issues of governance and jurisdiction, sovereignty, security, and leadership. People need access to information where it resides – and it was estimated, in 1990, that 90% of the data on Africa was stored in Europe and the United States.

As President Clinton said in April at the White House meeting of global leaders, on the information gap, "the computer and the Internet give us a chance to move more people out of poverty more quickly than at any time in all of human history. But it won't happen by accident. We'll have to work to make it happen".

Working Group 1: Harmonization and Rationalization of Development Data and Indicators

Presenter: Ms. Eszter Horvath (UN Statistical Division) – The UN Experience

An Inventory of Statistical Data-collection Activities, conducted by the UN Statistics Division in 1995, revealed a total of 312 data-collection activities reported by international organizations of which 117 were carried out by international organizations, involving all countries. The overburdening of countries with data requests, duplications in data-collection activities and the

existing gaps and inconsistencies among collected data call for rationalization and harmonization.

In response to the recent global conferences and summits, the demand for indicators has increased in the international arena. The various indicator-related activities undertaken by international organizations have promoted the use of statistics and have generated discussions on data requirements and the need for improvement in definitions, methods and estimation procedures. Moreover, problems with respect to coverage, reliability, inter-temporal and inter-country comparability of the statistical series have been identified.

The problem of the lack of relevant and timely development information has to be addressed through sustained statistical capacity building at the national level, while much better coordination is needed to address the problem of inconsistency among data and indicators disseminated by different agencies at the international level.

There is now widespread acceptance among international agencies on the need for coordination and harmonization to eliminate duplicative requests and share the data collected. The efforts at the international level to achieve better coordination, such as those initiated by ECOSOC and currently being made by the UN Statistics Division will alleviate some of the problems. However, the most pressing issue remains the lack of a sufficient development information infrastructure in many developing countries.

Working Group 2: Financing for Information

Presenter: Mr. David Barry (USA)

Financing for information faces technical and institutional obstacles. Information rarely has a political constituency to support it in a time of budgetary pressure. In the mid 1990's, shrinking Federal budgets led to cuts of many information sources in the U.S. including the environmental damage series of the Bureau of Economic Analysis, elimination of the Bureau of Mines and some of its information on minerals, and in a puzzling move, Congress abolished its own Office of Technological Assessment.

With increasing sensitivity to the importance of data, the Budget of the United States for 2001 has the following text box: Investing in Federal Statistics "Our democracy and economy demand that public and private leaders have unbiased, relevant, accurate, and timely information on which to base decisions. Data on populations, real GDP, and CPI, for example, are critical inputs to monetary, fiscal, trade, and regulatory policy. They also have a major impact on Government spending, budget projections, and the allocation of Federal funds. Taken together, statistics produced by the Federal Government on demographic, economic, and social conditions and trends are essential to inform decisions that are made by virtually every organization and household."

The 2001 Budget include five proposals for strengthening federal statistics pertaining to e-business, the census, the Producer Price Index, implementation of the American Community Survey, and sharing of data among Agencies to improve efficiency. The practitioner of

sustainable development will note that the text and proposals address economic and social information but not environment. This data is not neglected, but covered in individual agency budgets. Placing economic information in the foreground is a presentation strategy. Those who seek to champion the funding of needed information must explore how to effectively present their requests for financial support.

A window on financing information for the future is seen in the set of recommendations for financing the National Spatial Data Infrastructure (NSDI) in the US. This information, usable by those sharing the same region, industry or issue is aimed at supporting communities to build homes and businesses, improve the environment, improve infrastructure and revitalize their economies. The report on the NSDI is aimed at raising awareness about the value of this information to enable the needed funding to bring the infrastructure into being.

Working Group 3: Weakness in Data Collection

Presenter: Mr. Jan Bakkes (RIVM, Netherlands) – Improving Core Data Sets

Over the past years the demand for sustainable development data has shifted to a demand for explicit and policy-oriented assessments. A good example is the development of UNEP's GEO network and reports. However, this shift towards assessments does not remove the problems with the underlying data. In fact, the work for global assessments has revealed that their data foundation is dangerously weak in some respects, for example when it comes to monitoring progress over time.

One permanent problem is that many of the necessary data sets are required for the work of not one but many different organizations. Consequently, responsibilities for this largely common basis of data are often unclear or not taken. Other permanent problems are: misunderstandings persist (such as: 'there is data enough' or 'earth observation will solve all data needs'); primary collection is costly and time-consuming to set up or modify; the way from source to user is often long, with the effect that by the time data are used in global or regional assessments, national experts view them as obsolete.

Data work for GEO-2000 has reminded those involved that up to three-quarters of the data required are non-environment data. In addition, a straight compilation of country data for 150 key variables from the customary international sources proved to be unusable, because of inconsistencies, errors and incompatibility between globally consistent sets and nationally acknowledged data. It also underlined that in capacity building an important aspect is the ability to work with contradictory information. Finally, as impacts on specific groups and ecosystems are getting more attention, requiring analysis at various scales, spatially explicit information is becoming more in demand.

Various lines of action offer themselves: (1) Information analyses for specific assessments can be completed. At the international level this should be done for monitoring progress for global and regional conventions. Such analyses require only a small effort, but lay the basis for needs-driven improvement of data availability. (2) For organizations working on assessments, it does make sense to set up and maintain specific integrated data collections comprising the core of

their input data. They should be encouraged to provide external access to such collections. (3) Improving technical access through portals and the like can be a useful line of action. However, it has to be borne in mind that this is essentially a supply-driven approach that only makes sense if the supply is good enough. Too often, this is not so. (4) With respect to capacity building on data issues, it makes sense to concentrate on learning by doing in the context of assessments. Again, GEO is an example. (5) The ongoing attempts at coordination between the various earth observation systems should be encouraged, especially with respect to providing tangible results such as easier and coordinated access to the information outputs of the systems.

Theme 3: New Information Technologies

Keynote: Mr. Robert Ashe, Cognos, Inc.

Mr. Ashe explained to the Meeting, that Cognos works in the area of facilitating access to, and exchange of "business intelligence". Their main task is to ensure that technology meets the needs of citizens by providing tools for changing raw data into useable information or "knowledge". To this end, they work with organizations in understanding the types of information needs that exist, which types of information an organization is dealing with and consequently what is required to reach an integrated solution to a specific problem. A major objective is to ensure that different people within an organization, having different priorities or areas of concentration, are all speaking the same language.

Mr. Ashe also mentioned that the paper-based, centralized view of information has evolved into being decentralized and digital, and that the client-server focus is shifting to the Inter-net, which has served to change the value of information. Since e-business equals transactions, it is fundamental to forge connections over the Internet.

Working Group 1: The Promise of New Technologies

Presenter: Mr. V. Jayaraman (India) – Satellite Remote Sensing

Mr. Jayaraman brought out the need for long-term consistent measurements of key physical variables to study the shifts in state and variability of Earth system components. Particularly, he emphasized the importance of understanding the ecosystems globally so as to act rationally at local levels. Global phenomena such as greenhouse effect, El Nino, and acid rain jostle for attention along with local problems such as deforestation and soil erosion, which in aggregate have global consequences. Earth observation from space is one of the most viable technology means for understanding the Planet Earth and the various associated scientific uncertainties. Mr. Jayaraman specifically brought out the role of space technology in Agenda 21 implementation. Satellite remote sensing provides vital information on environmental impacts, resources data/ accounting, and inputs for integrated development plans for both rural and urban settings. Satellite communication provides connectivity to the remote villages, including meteorological information services as well as developmental education communication to the needy. Mr. Jayaraman elaborated on some of the down to earth applications using satellite remote sensing in various natural resources and environmental applications, as well as emerging scenarios in global earth observation satellites. The advent of more than 230 instruments in over 70 satellite

missions in the next 10-15 years with calibrated sensors providing a wide variety of data provides an opportunity for the scientists to understand the complex interactions between various components of the non-linear, coupled Earth system. He emphasized the role of evolving Integrated Global Observing Strategy (IGOS), wherein space based observations are appropriately linked with the ground-based observations. In addition, he emphasized the role of the enabling technologies such as Geographical Information Systems, Satellite Positioning Systems, Photogrammetry, Artificial Intelligence and Neural Networks in enriching the satellite based information for providing services to the user community. With the digital information revolution becoming a reality, the seamless integration of satellite based services on the information super highway along with other conventional services is the order of the day providing the services to the users in a format and style understandable to them. Mr. Jayaraman also emphasized the need for appropriate human resource development and involvement of scientists from various areas to work together to understand and implement the scientific solutions to ensure sustainable development.

Working Group 2: New Multi-media Technologies

Presenter: Mr. Peter Hardi (IISD, Canada) – The Dashboard of Sustainability

Information and reporting tools on SD have two tasks: Influence the public discourse and influence decision-makers. We need to communicate the same message, in different packaging. It is a two-way process, involving "encoding" and "decoding" an expert content for public consumption. Means that are reviewed: Multi-media presentations, GIS, and metaphors and graphics.

1. Multi-Media. Best examples:

- CNN's People Count, an award winning television series, showing real people making real progress for a better tomorrow: http://www.peoplecounttv.com/. (Reporter and executive producer Barbara Pyle)
- Real audio presentations of York Centre for Applied Sustainability on SD: http://www.yorku.ca/ycas

Challenge of multi-media presentation of information:
How can we link the message of high-powered, high-speed clips to quantitative information? We need to transform visual and narrated emotions of a drama to politically effective tools.

2. GIS. Best examples:

Community Sustainability Indicators: http://www.crit.com/
Indicators of Housing and Neighborhood Quality (University of Wisconsin) http://www.uwm.edu/Dept/GIS/illus/indicators.html
Internet Resources, Maps and Indicators, GIS: WRI http://www.igc.org/wri/indictrs/maplinks.html

Challenge of GIS presentations:

How can we interpret the contextual complexity of mapping presentations in terms of aggregation? The task is to superimpose fragmented data, like solving a jigsaw puzzle.

3. Metaphors and graphic presentations

These tools include verbal or graphic symbolism in transmitting information. They help simplify system characteristics, help focus our message, provide visually engaging tools.

Challenges of metaphors

How to translate popularized presentations to decision-making tools? We need to comprise complex messages in a catchphrase or in a single image: It is like "zipping" information. Presenting metaphors we need to help open a "zip-file" and communicate the content.

Illustrations for metaphors:

WWF International: Living Planet http:www.panda.org/livingplanet/lpr/index.htm
IISD-CGSDI: Dashboard, http:iisd.ca/cgsdi/dashboard dsply.htm

Working Group 3: Making Sustainable Development Information Widely Available

Professor Nazli Choucri (MIT, USA) - Web-based Information Systems

Introduction. This session focused on advances in Internet-based technologies, addressing (a) new challenges and opportunities in uses of information for decision-making, and (b) specific examples of collaborative response strategies, implementation, and management.

Challenges & Opportunities. Key challenges include making e-information widely available, managing web-based information systems, organizing masses of materials, meeting needs of diverse groups, reducing barriers to internet and intranet access, and managing mattes of cost and price. Significant opportunities are afforded by: knowledge networking practices, multilingual capacities, mirror-site and distributed management, strategic partnerships, and coupling localization and globalization.

Strategies & Implementation. Detailed attention was given to the ongoing international knowledge networking initiative – Global System for Sustainable Development (GSSD) -- since it appeared to be the only multilingual, mirror sited, globally distributed knowledge network. Developed at MIT, and hosted by the Government of China, Ministry of Science and Technology (ACCA21), The American University in Beirut, and Ecole Des Mines St. Etienne, France, GSSD

operates in Chinese, Arabic, French, and English, and soon in Italian, Spanish, and Japanese, and mirror sited locally.

Conclusion. This distributed strategy ensures strategic collaboration worldwide, effective response to cultural diversity, and joint responsibility in information management, diffusion, and feedback – as well as reliable provision of knowledge from local sources into global networks.

ANNEX 2

INTERNATIONAL EXPERT MEETING ON INFORMATION FOR DECISION MAKING AND PARTICIPATION

Château Cartier Resort
Aylmer, Quebec
September 25–28, 2000

Goal of **Chapter 40 of Agenda 21**:

- To bridge the data gap in the availability, quality, coherence, standardization, and accessibility between the developed and the developing world.
- To improve the availability of information.

Objectives of the Meeting:

- To provide advice and recommendations to the CSD on the kinds of policies that should be adopted by governments to further implementation of chapter 40 of Agenda 21, namely information for decision-making.
- To provide substantive inputs for the report of the Secretary-General on this topic.

Programme			
Pre-meeting session	**Day 1**	**Day 2**	**Day 3**
Monday September 25 ***14:30 – 17:30***	***Tuesday*** September 26 ***09:30 – 17:30***	***Wednesday*** September 27 ***09:00 – 18:00***	***Thursday*** September 28 ***10:00 – 12:30***
Informal consultations with testing country representatives about their experience with the United Nations indicators program	**Theme 1**: Access to and Uses of information	**Theme 2**: Bridging the Data Gap **Theme 3**: New Information Technologies	Conclusions and recommendations on information for decision making

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Pre-meeting session	**Indicators as tools for decision making**	**Lauréat Room**
Monday September 25 ***14:30 –17:30***	*Informal consultations with representatives of countries testing the CSD indicators as tools to support national decision-making processes and the progress made in this direction by the CSD Work Program on Indicators of Sustainable Development.* Led by Mr. Lowell Flanders, United Nations Department of Economic and Social Affairs (UNDESA)	

Tuesday September 26	**Day 1** **Welcome and Theme 1: Access to and Uses of Information**	
08:45 – 09:30	Registration / Continental breakfast	Foyer
09:30 – 09:40	Welcoming remarks — Ms. Elizabeth Dowdeswell, Chair Former Under Secretary General and Executive Director of the United Nations Environment Programme (UNEP)	Chaudière C
09:40 – 10:00	Welcoming speech — Mr. Alan Nymark Deputy Minister, Environment Canada, on behalf of the Government of Canada	Chaudière C
10:00 – 10:20	Welcome and organization of the meeting Mr. Lowell Flanders (UNDESA) and Mr. Arthur Dahl (Coordinator, Earthwatch, UNEP)	Chaudière C
10:20 – 10:40	Presentation on CSD Indicators Program Mr. Lowell Flanders	Chaudière C
10:40 – 11:00	Discussion	Chaudière C
11:00 – 11:15	Coffee break	Foyer
11:15 – 11:45	Keynote presentation on Theme 1: Access to and Uses of Information	Mr. Taholo Kami, Internet for Development Consultant, SIDSnet Chaudière C
11:45 – 13:00	Working groups — **Theme 1: Access to and Uses of Information**	
	Group One	**Artiste A**

Public access to environmental information, as exemplified in the adoption in 1998 of the Aarhus Convention on Access to Information, Public Participation in Decision Making, and Access to Justice in Environmental Matters. Issue of in-creasing access among those presently excluded from the information revolution. Issue of training in how to use newly available information for decision-making.

Presenters: Ms. Elena Petkova (World Resources Institute) and Mr. Christian Brodhag (École nationale supérieure des mines de Saint-Étienne)

Group Two **Artiste B**

Progress in the collection and use of traditional information under the Convention to Combat Desertification, the Convention on Biological Diversity, and other instruments and agreements. Bottom-up approach of incorporating knowledge of major groups into scientific information with the aim of reinforcing scientific information.

Presenter: Mr. Stephen J. Augustine (Canadian Museum of Civilization)

Group Three **Lauréat Room**

The particular problems of data collection in developed and developing countries, and the difficulties in obtaining and combining data from different ministries for an integrated view of sustainable development. Issue of institutional problems of integrating information within governments and combining information from economic, social, and environmental sectors. Technical problems of integrating information at the local, national, regional, and global levels.

Presenter: Mr. Edgar Gutiérrez-Espeleta (University of Costa Rica)

12:30 – 14:30	Exhibits	Salon B
13:00 – 14:30	Lunch	Chaudière A
14:30 – 16:00	Continuation of working groups	As indicated above prior to lunch
16:00 - 16:15	Coffee break	Foyer
16:15 – 17:30	Reports to the plenary and discussion of working group results	Chaudière C
17:00 – 20:00	Exhibits	Salon B
18:00 – 19:00	Reception — hosted by Dr. Robert Slater, Senior Assistant Deputy Minister, Environment Canada	Foyer
19:00 – 20:30	Dinner	Chaudière A

Wednesday September 27	**Day 2** **Theme 2: Bridging the Data Gap and** **Theme 3: New Information Technologies**

07:30 – 08:30	Continental breakfast	Foyer
08:30 – 09:00	Remarks — Dr. Bedrich Moldan, Chairman of the Ninth Session of the Commission on Sustainable Development	Chaudière C
09:00 – 09:30	Keynote presentation on Theme 2: Bridging the Data Gap Mr. Charles Bassett, Senior Vice President, Canadian International Development Agency	Chaudière C
09:30 – 11:30	Working groups — **Theme 2: Bridging the Data Gap**	

Group One **Artiste A**

Problems of non-uniform standards and methods for handling information. The need for harmonization and rationalization of development data and indicators in an attempt to address the growing number of data requirements.

Presenter: Ms. Eszter Horvath (United Nations Department of Economic and Social Affairs)

Group Two **Artiste B**

Financing of information, including issues related to reductions in government support for essential observations. Need to shift data collection from research programmes to operational systems. Need to build long-term time series on global change. Commercialization of information, intellectual property rights, and the need to maintain and develop information services in the public interest.

Presenter: Mr. David Berry (Interagency Working Group on Sustainable Development Indicators)

Group Three **Lauréat Room**

Weaknesses in the data collection, analysis, assessment, and reporting processes. Need to eliminate bottlenecks in the information system. Improving core data sets, strengthening assessment capacities, institutionalization of information systems, and integration of information systems from data collection through to delivery to users.

Presenter: Mr. Jan Bakkes (UNEP Collaborating Centre for Assessment, Reporting and Forecasting at RIVM)

11:30 – 11:45	Coffee break	Foyer
11:45 – 13:00	Reports to the plenary and discussion	

	of working group results	Chaudière C
12:30 – 14:30	Exhibits	Salon B
13:00 – 14:30	Lunch	Chaudière A
14:30 – 15:00	Keynote presentation on Theme 3: New Information Technologies Mr. Robert G. Ashe, Senior Vice President, Worldwide Customer Services, Cognos	Chaudière C
15:00 – 16:00	Working groups — **Theme 3: New Information Technologies**	

Group One **Artiste A**

The possibilities opened up by new technologies. Growing flood of some types of information (such as from satellite remote sensing) and implications for increased assessment capacities. The potential for more rapid and targeted delivery of information to decision makers in near-real time.

Presenter: Dr. Venkatakrishnan Jayaraman
(Indian Space Research Organisation)

Group Two **Artiste B**

New multimedia technologies and tools such as indicators and animated graphical presentations that are opening new avenues for preparing and presenting information in formats more easily understood by decision makers and the general public. Practical applications of GIS and map-based information tools that have expanded rapidly in recent years as tools allowing for visual assessment of impacts and of resources available to address problems and emergencies.

Presenter: Mr. Peter Hardi (Measurements and Indicators Program,
International Institute for Sustainable Development)

Group Three **Lauréat Room**

Efforts to make electronic sustainable development information as widely available as possible, including the development of Web-based information systems, and the challenges of organizing masses of information to be easily accessed by and appropriate to different user groups. Need to provide electronic access for disadvantaged groups and countries.

Presenter: Dr. Nazli Choucri (Technology and Development Program,
Global System for Sustainable Development,
Massachusetts Institute of Technology)

16:00 – 16:15	Coffee break	In respective working group locations
16:15 – 17:00	Continuation of working groups	As indicated above
17:00 – 18:00	Reports to the plenary and discussion of working group results	Chaudière C
19:00 –21:00	Exhibits	Salon B

20:00 – 22:30	Barbecue dinner	Outdoor patio

Thursday September 28	**Day 3** **Conclusions and Recommendations on Information for Decision Making**

09:00 - 10:00	Continental breakfast	Foyer
10:00 – 11:30	Adoption of the main conclusions and recommendations of the meeting	Chaudiere A
11:30 – 12:30	Closing remarks	Chaudière A
12:45 – 13:30	Lunch	Chaudière B

This meeting would not have been possible without the contribution and collaboration of Agriculture and Agri-Food Canada, the Canadian International Development Agency, the Department of Foreign Affairs and International Trade, Environment Canada, Health Canada, Industry Canada, and Natural Resources Canada.

ANNEX 3

INTERNATIONAL EXPERT MEETING ON INFORMATION FOR DECISION-MAKING AND PARTICIPATION (Chapter 40 of Agenda 21) Ottawa, Canada 25-28 September 2000

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